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COMMERCIAL FISHERIES REVIEW

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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
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CHEMICAL AND ENZYMATIC HYDROLYSIS OF FISH SCALES

C. R. Fellers, N. I. Lemack, and G. E. Livingston*

INTRODUCTION

Fish scales, a byproduct of the fish-processing industry, normally are wasted. Their only commercial use at this time is in the preparation of pearl essence from scales of some species such as herring. The scales, which are removed mechanically from the fish, are washed away by jets of water, and eventually find their way to the harbor, where unless tidal flows are strong they settle to the bottom and become a potential nuisance.

FIG. 1 - GROUND AND WHOLE POLLOCK FISH SCALES.

Attempts to process the scales in fish-meal driers have been only partially successful. The scales mass in large balls which are difficult to dry, stick to the equipment, and clog the driers; and some scales are drawn up the exhaust stack. Attempts have been made to find other uses for the scales but apparently without success.

This general project is designed to attack the problem of scale disposal by determining if the scales may have value as a source of protein in the diets of farm animals.

There is some reluctance on the part of the fish-meal manufacturers to handle the abrasive raw scales, owing to their poor grinding properties. A more suitable form for commercial handling therefore is to be desired. For this reason, the study reported here concerns an investigation of the optimum conditions of hydrolyzing the scales of ocean perch (Sebastes marinus) for use in animal feeding. Hydrolysis also may alter the nitrogen compounds in the scales physically into a more palatable form and perhaps chemically into a more available form.

* THE RESEARCH REPORTED IN THIS PAPER WAS CONDUCTED BY THE UNIVERSITY OF MASSACHUSETTS UNDER A CONTRACT WITH THE U. S. FISH AND WILDLIFE SERVICE. IT WAS FINANCED BY FUNDS MADE AVAILABLE UNDER PROVISIONS OF PUBLIC LAW 466, 83RD CONGRESS, APPROVED JULY 1, 1954, GENERALLY TERMED THE SALTONSTALL-KENNEDY ACT. THE RESEARCH WAS UNDER THE GENERAL SUPERVISION OF THE STAFF OF THE FISHERY TECHNOLOGICAL LABORATORY, EAST BOSTON, MASS. THEY ALSO AIDED THE CONTRACTOR IN OBTAINING SUPPLIES OF FISH SCALES AS NEEDED THROUGHOUT THE STUDY. THIS ARTICLE WAS PREPARED BY DONALD G. SNYDER, BIOCHEMIST, FISHERY TECHNOLOGICAL LABORATORY, COLLEGE PARK, MD., FROM PROJECT REPORTS SUBMITTED BY THE CONTRACTOR TO THE U. S. FISH AND WILDLIFE SERVICE.

EXPERIMENTAL AND RESULTS

Seven 5-gram samples of dried scales from ocean perch were hydrolyzed by refluxing them for 10 hours in 250 milliliters of the following solutions: (a) water, (b) 10- and 5-percent sodium hydroxide, (c) 33- and 5-percent sulfuric acid, (d) sodium hydroxide solution at pH 9.7, and (e) sulfuric acid solution at pH 3.8. The extent of hydrolysis, as measured by percentage reduction in amount of insoluble solids, was 52.4, 57.8, 50.8, 52.4, 57.2, 47.6, and 48.4 percent, respectively.

Since these acid-base hydrolysates resulted in yields of only about 50 percent, an investigation into the value of enzymatically hydrolyzing the scales was suggested. Five grams of scales was added to 250 milliliters of a 0.20-percent solution of pepsin adjusted to pH 1.7 with hydrochloric acid. The mixture was placed in an incubator for approximately 20 hours at 37° C. This treatment resulted in 98.5-percent hydrolysis.

Since this treatment produced nearly completed hydrolysis, it was desirable to investigate what ratio of scales to pepsin was best for optimum hydrolysis with minimum amount of liquid. Five grams of scales was added to 250 milliliters of a 0.1-percent solution of pepsin in 0.1 N hydrochloric acid; 100 milliliters of a 0.2-percent solution of pepsin in 0.1 N hydrochloric acid; and 50 milliliters of a 0.2-percent solution of pepsin in 0.1 N hydrochloric acid. Each mixture was placed in an incubator for approximately 20 hours at 37° C., after which time the hydrolysis was 96.6, 97.6, and 80.0 percent complete, respectively. From these data, it was evident that the best solution to use would be 100 milliliters of a 0.2-percent pepsin solution in 0.1 N hydrochloric acid containing 5 grams of scales.

Initially, some concern was shown because of the large amount of sodium hydroxide needed to neutralize the hydrochloric acid. This requirement would result in a dried hydrolysate containing relatively large concentrations of sodium chloride, which might possibly affect the palatability of the scale hydrolysate and, thereby, the nutritive value.

Three hydrolysates were prepared in order to determine the final salt content: the first was unadjusted; the second, partially neutralized to pH 4.5; and the third; neutralized to pH 7.0. The percentages of sodium chloride (calculated from sodium content), of crude protein, and of ash were 2.89, 38.6 and 39.7; 4.14, 35.6 and 44.6; and 5.42, 33.3 and 59.4, respectively. It was thought that the most satisfactory hydrolysate might be the one neutralized to pH 4.5 since it was lower in acidity than the unadjusted hydrolysate and lower in salt content than the fully neutralized material. Subsequent investigation showed, however, that this hydrolysate was the least desirable, owing (1) to its highly hygroscopic nature, which made drying difficult, and (2) to the odors formed during further processing. As a result, the completely neutralized hydrolysate was deemed most desirable. This hydrolysate was not hygroscopic and was easily ground.

Since a less expensive economic proteolytic reagent than reagent-grade pepsin was desirable, the effectiveness of Proteose 15[1/] for hydrolyzing fish scales was investigated. Proteose 15 is a purified form of Rohm and Haas Rhozyme B-6, which currently is used to facilitate the concentration of fish solubles. The optimum pH for Proteose 15 is reported as being 7. Digestion at this pH would eliminate the need for acidification and neutralization with resultant formation of salt.

Five-gram samples of scales were hydrolyzed in 100-milliliter solutions of various concentrations ranging from 0.2 to 1.0 percent of Proteose 15 adjusted from pH 2.1 to 7.0. These mixtures were placed in an oven at 60° C. (the reported optimum temperature for proteose 15 hydrolysis) overnight, and one mixture, which served as a control, was incubated at 37° C. overnight. Visual examination of these mixtures showed that the hydrolysis was quite incomplete.

1/ MANUFACTURED FOR ROHM AND HAAS CO., PHILADELPHIA, PA.

The results indicated that the best solution would be 100 milliliters of a 0.2-percent pepsin solution containing 5 grams of scales. Use of this solution resulted in 98-percent hydrolysis. At completion of hydrolysis, the solution was filtered, and the filtrate neutralized with sodium hydroxide. The water then was evaporated, the hydrolysate was dried, and not being hygroscopic, was ground easily. The resulting material was a fine, soft, white powder, for which the percentage analyses were as follows: moisture 1.8; crude protein, 34.0; calcium, 10.5; phosphorous, 5.5; sodium, 1.2; sodium chloride, 3.1; potassium, 0.2; and ash, 60.1. In addition, the scales contained 0.177 milligrams of riboflavin and 0.2 micrograms of cyanocobalamin per 100 grams of hydrolysate.

SUMMARY AND CONCLUSION

The yield from the hydrolysis of scales from ocean perch was only about 50 percent when the scales were hydrolyzed in water and in different concentrations of sodium hydroxide and sulfuric acid. The scales were 98.6 percent hydrolyzed, however, when 5 grams of scales was added to 250 milliliters of a 0.2-percent solution of pepsin adjusted to pH 1.7 with hydrochloric acid and incubated for 20 hours at 37° C. This extent of hydrolysis was not affected when the volume was reduced to 100 milliliters of the 0.2-percent solution of pepsin.

A need for complete neutralization of the hydrolysates was indicated when they tended to resist dehydration and produced repulsive odors. The completely neutralized hydrolysate was not hygroscopic and was easily pulverized. Hydrolysis of the scales under different conditions with Proteose 15 was found to be very incomplete.

This study indicates that the best method of preparing scale hydrolysates in small amounts is to place 5 grams of scales in 100 milliliters of a 0.2-percent pepsin solution adjusted to pH 1.7, and to incubate for 20 hours at 37° C. This method results in about 98-percent hydrolysis. After hydrolysis, the solution is filtered, and the filtrate is neutralized with sodium hydroxide. The water then is boiled off, and the hydrolysate is dried and pulverized. The resulting material is a fine, soft, white powder. Sufficient quantities of fish-scale hydrolysates will be prepared in this manner for use in future animal-feeding tests. In these tests the biological value of the hydrolyzed scales will be compared with that of the raw scales.

PACKAGED FROZEN OYSTERS

Research has shown that frozen oysters packaged unglazed but overwrapped have a storage life of about 6 months. Frozen oysters glazed with water and with weak brine were still acceptable after 8 months. The best frozen stored oysters were those which had been packed in a tin under an 18-inch vacuum.

--Southern Fisherman, April 1956.

AMINO ACID COMPOSITION OF THE PROTEIN AND INORGANIC CONSTITUENTS OF THE ASH OF POLLOCK FISH SCALES

By Donald G. Snyder*

ABSTRACT

THE AMINO ACID COMPOSITION OF THE PROTEIN OF POLLOCK FISH SCALES WAS DETERMINED BY PAPER PARTITION CHROMATOGRAPHY AND MICROBIOLOGICAL ANALYSIS. THE DATA INDICATE THAT THE PROTEIN OF POLLOCK FISH SCALES IS PROBABLY A SCLEROPROTEIN OF THE COLLAGEN TYPE CONTAINING HIGH LEVELS OF GLYCINE AND AMOUNTS OF ARGININE AND SERINE ABOUT EQUAL TO THAT FOUND IN THE PROTEIN OF WHOLE EGG. THE SCALE PROTEIN CONTAINS FAIR AMOUNTS OF ALANINE, PROLINE, AND HYDROXYPROLINE, AND EXTREMELY SMALL AMOUNTS OF CYSTINE AND TRYPTOPHAN. ALSO, THE SCALE PROTEIN CONTAINS SLIGHTLY LESS ASPARTIC ACID, GLUTAMIC ACID, AND THREONINE, AND MUCH SMALLER AMOUNTS OF HISTIDINE, ISOLEUCINE, LEUCINE, LYSINE, METHIONINE, PHENYLALANINE, TYROSINE, AND VALINE THAN DOES WHOLE-EGG PROTEIN. THE INORGANIC CONSTITUENTS OF THE ASH OF POLLOCK SCALES WERE DETERMINED SEMIQUANTITATIVELY BY SPECTROGRAPHIC ANALYSIS. THE DATA INDICATE THAT NO UNUSUAL KINDS OR QUANTITIES OF INORGANIC CONSTITUENTS THAT MIGHT CAUSE BIOLOGICAL INJURY WHEN FED TO ANIMALS ARE PRESENT IN THE ASH OF THE SCALES. AN INTERPRETATION OF THESE FINDINGS IS MADE IN RELATION TO CONCLUSIONS OBTAINED FROM A PREVIOUSLY REPORTED RAT-FEEDING STUDY ON THE COMPARATIVE NUTRITIVE VALUE, DIGESTIBILITY, AND "BIOLOGICAL VALUE" OF POLLOCK-FISH-SCALE AND CASEIN-LACTALBUMIN PROTEINS.

INTRODUCTION

During the past few years, the fishing industry has had the increasingly difficult problem of annually disposing of thousands of tons of fish scales because filleted fish now have replaced unprocessed fresh fish in sales volume. Harbors that are close to plants normally provide an inexpensive area of scale disposal, but unless tidal flows are strong, pollution may result.

Chemical engineers and pharmaceutical houses have been contacted to obtain suggestions for utilizing the scales, but this approach has been unsuccessful. Attempts to use the scales as fertilizer on local farms also have not met with success.

FIG. 1 - PAPER PARTITION CHROMOTOGRAPHY IS USED TO IDENTIFY UNKNOWN AMINO ACIDS IN PROTEIN HYDROLYSATES.

In the past, very little research has been conducted with fish scales. The calcium oxalate and total calcium contents were determined in the scales of 30 Japanese species of teleosts (Nishihara 1954). Obata et al (1950 and 1953) and Groen (1953) studied the identity of the pearl essence of fish scales. Corti and Keller (1952) chromatographed fish-scale hydrolysates and identified a few of the amino acids present. A purple or blue fluorescent substance in the skin and scales of some fish was studied by several investigators (Fontaine and Busnel 1938, Polonovski et al 1943, and Hama et al 1952). Block et al (1949) showed that herring scales contain gelatin and a collagen-lile protein, namely ichthylepiden. Randoin et al (1938) reported that the skin and scales of certain fish contain a flavin that can be utilized by rats in place of riboflavin. Nichols (1956) investigated to a limited extent the physical structure of fish scales. Thus, the information found in the literature is brief and is of little value in suggesting a solution to the present problem.

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Recently, however, as part of a general study to determine whether scales may have value as a supplemental source of protein in the diets of animals, Snyder and Nilson (1957) conducted rat-feeding tests to compare the nutritive value for growth, the biological value for maintenance, and the digestibility of pollock-fish scale and casein-lactalbumin proteins. The data from these studies indicate that pollock-fish scale protein is digested about 80 percent, but is utilized about 30 percent less efficiently than is a protein supplement consisting of three parts casein and one part lactalbumin (CL). The data also indicate that fish scales as the only source of protein in a diet containing 9 percent protein are incapable of supporting growth of young rats but can be utilized as a limited source of protein when supplemented with CL protein. Increased utilization of pollock-fish scale protein, in combination with stepwise higher levels of CL protein, indicate that no toxic substances per se for growing rats are present in the scales.

The nutritional inadequacy of pollock-fish scale protein alone and the increased utilization of that protein in combination with stepwise higher levels of CL protein were interpreted as likely due to a deficiency and/or imbalance of specific nitrogen nutrients in pollock-fish scales. This interpretation was supported also by information obtained in the literature concerning deficiency states caused by feeding similar types of waste protein that serve a protective function in the animal organism, such as wool (Routh 1942), hog hoofs (Wagner and Elvehjem 1942, 1943), and chicken feathers (Wilder et al 1955). Chemical analyses of similar proteins that have a supporting function in the animal organism, such as collagen (Bowes et al 1955) and elastin (Graham et al 1949) have indicated deficiencies of some "essential" amino acids.

Information on the amino acid-composition of pollock-fish scale protein was considered necessary, therefore, to evaluate properly the conclusions suggested from the results of the rat-feeding study. A knowledge of the inorganic constituents present in the ash also was deemed desirable, since the scales contain nearly 40-percent ash, presumably as various apatites (Corti and Keller 1952), which might contain unusual inorganic constituents or great excesses of other constituents that could affect nutritive quality.

MATERIAL AND ANALYSIS

The fish scales received at this laboratory for these studies were furnished by the staff of the Fishery Technological Laboratory, U. S. Bureau of Commercial Fisheries, East Boston, Mass. Pollock (Pollachius virens) were scaled by hand. The scales were washed thoroughly with water, drained, and spread in pans to dry in an oven at 100° C. They then were shipped to this laboratory, where they were ground, as finally as possible, in a Hobart coffee grinder.

No great variation was found in the moisture, protein (N x 6.25), fat, and ash of representative samples of scales from the various lots. The mean and ranges of moisture content for 4 lots of scales were 4.4 and 1.0-6.9 percent, respectively; the protein content for 11 lots was 59.5 and 56.6-62.5 percent; the fat content for 4 lots was 0.004 and 0.0-1.0 percent; and the ash content for 5 lots was 38.9 and 36.1-43.1 percent. The methods of analyses of the Association of Official Agricultural Chemists (1955) were used.

A representative sample of ground scales was chosen randomly from one of the lots received at this Laboratory for use in the present study. The means of three analyses each of this sample of scales on a moisture-free basis were 60.1 percent for protein and 39.4 percent for ash.

No significant difference was found between the nutritive value of the scale protein from the lot of scales from which this sample was obtained and that of the various other lots of scales. It can be concluded, therefore, that the sample from this lot of scales was representative of the scales of pollock in general. The small dif-

ferences in moisture, protein, fat, and ash contents found among the various lots of scales probably can be attributed to the nutritional status and age of the fish from which the scales were collected (Nishihara 1954).

EXPERIMENTAL AND RESULTS

PAPER-PARTITION CHROMATOGRAPHY: Initially, paper-partition chromatography was employed to determine the amino acids present in an acid and alkaline hydrolysate of pollock fish scales. Whatman No. I paper for chromatography was used with the following solvent systems, either employed separately for one-dimensional, or in various combinations for two-dimensional chromatography: (1) phenol; water (80/20 v/v) to which was added 0.004 percent 8-hydroxyquinoline; (2) as above, but with a beaker of 0.3 percent NH_4OH introduced into the chromatographic chamber; (3) 1-butanol:acetic acid:water (40:10:50 v/v/v); and (4) 2, 6-lutidine:2, 4, 6-collidine:water: diethylamine (100:100:100:3 v/v/v). The chromatograms were developed by dipping in a 0.25-percent acetone solution of ninhydrin.

Semiquantitative data were obtained by visually comparing a series of dilutions of known and unknown concentrations of the amino acids under investigation on the same one or two dimensional chromatograms (Block et al 1955).

Some difficulty was experienced in interpreting the chromatograms owing to the extremely high content of salt in the scales; but in general, glycine was present in the hydrolysate in great excess, whereas most of the other amino acids were present in lesser amounts than those amounts usually found in natural proteins. Proline and hydroxyproline were present in fair amounts. Cystine and tryptophan either were missing or were present in extremely small amounts.

MICROBIOLOGICAL ANALYSIS: Although the data on amino acid content obtained from chromatographic analyses were enlightening, it was believed that more precise quantitative data obtained from microbiological analyses would better supply the information needed on how to conduct further feeding studies to determine the nature of possible amino acid imbalances in the protein from fish scales. These data also would aid in determining the nature and amount of amino acid supplementation needed to enhance the nutritive value of the pollock-fish scale protein and to reduce imbalances. A sample of the ground pollock fish scales was sent to the Wisconsin Alumni Research Foundation, Madison, Wis., to be assayed for 18 amino acids by a microbiological method. The method of analysis used was that of Henderson and Snell (1948). A single media was employed that contained all the nutrients required for growth by the various lactic acid-producing test organisms used to conduct the assay.

The microorganisms employed were Lactobacillus arabinosus 17-5 for glutamic acid, leucine, phenylalanine, valine, and tryptophan; Streptococcus faecalis R for arginine, histidine, methionine, and threonine; Latobacillus citrovorum for alanine; Lactobacillus casei for serine and Leuconostic mesenteroides P-60 for aspartic acid, lysine, proline, isoleucine, glycine, cystine, and tyrosine.

Table 1 - Amino Acids Per 16 Grams of Nitrogen Present in Pollock-Fish Scale and Whole-Egg Protein1/

Amino Acid	Pollock Scales	Whole Egg
	. . . (Grams) . .	
Alanine	4.1	2/
Arginine	8.8	7.0
Aspartic acid . . .	4.6	5.7
Cystine	0.5	2.3
Glutamic acid . . .	10.6	12.6
Glycine	37.6	3.7
Histidine	1.6	2.4
Isoleucine	2.5	7.7
Leucine	3.5	9.2
Lysine	4.4	7.5
Methionine	1.8	4.0
Phenylalanine . . .	2.7	6.3
Proline	3.5	2/
Serine	9.9	7.5
Threonine	4.1	5.0
Tryptophan	0.5	1.7
Tyrosine	2.3	4.5
Valine	3.4	7.8

1/APPROXIMATELY EQUAL TO PERCENT OF PROTEIN.
2/NO ANALYSES FOUND.

The results of the microbiological assay, as grams of amino acid per 16 grams of nitrogen, and the amino acid composition of whole-egg protein (Hawk et al 1954) are included in table 1. Whole-egg protein is considered by many to be an ideal protein and thus should be an excellent protein for comparison and reference.

The amino acid analyses show that the pollock-fish scale protein is rich in glycine and contains about the same amount of arginine and serine as does whole-egg protein. Pollock-fish scale protein contains slightly less aspartic acid, glutamic acid, and threonine, and much smaller amounts of isoleucine, lysine, methionine, phenylalanine, tyrosine, and valine. Extremely small amounts of cystine and tryptophan are present.

SPECTROGRAPHIC ANALYSIS: The inorganic constituents of the two samples of ashed scales from the same lots were determined semiquantitatively by spectrographic analysis in a Bausch and Lomb quartz spectograph with direct arc excitation. The data were kindly furnished by Maurice J. Peterson of the U. S. Bureau of Mines, College Park, Md. The first sample of scales was dry-ashed at 550° C., and the second sample was wet-ashed with sulfuric and nitric acid at about 200° C.

Each of these samples of ashed scales was mixed with graphite powder of high purity and the mixtures were placed in a graphite electrode. The mixture in the graphite electrode then was arced against a graphite counter-electrode, using direct-current arc excitation, with the current being approximately 12 amperes. The completed vaporization of the sample required about 2.5 minutes. While the arcing was taking place, the spectrograph recorded on photographic plates the spectrum of the elements present in the sample.

Two different types of Eastman plates were used to record the spectrum from 2400 to 8600 Ångstrom units: A spectrum analysis number 2 plate was used for the ultra-violet and blue region, and an I-L plate was used for the remainder of the blue region to 8600 Ångstrom units.

These photographic records, or spectrograms, were compared visually with spectrograms of varing concentration standards of mineral elements, the wavelengths of which were recorded under identical conditions on separate plates. The semiquantitative results of the spectrographic analyses are presented in table 2.

Table 2 - The Percentage Range of Inorganic Constituents Present in the Ash of Pollock Fish Scales

	Ca	P	Mg	Mn	Fe	Al	Cu	Ni	Na	Ba	Sr	Li	K	Si
Dry ashed	>10	>10	0.3-3.0	.01-.10	.03-.30	.01-.1	.005-.05	-1/ -	.03-.30	.001-.01	.3-3.0	.005-.05	.01-.10	.01-.10
Wet ashed	>10	>10	.3-3.0	.01-.10	.03-.30	.02-.2	.005-.05	.005-.05	.03-.30	.001-.01	.3-3.0	.005-.05	.1-1.0	.05-.50

1/ NOT DETECTED.

Manganese, copper, barium, and lithium were present in amounts of less than 0.1 percent by weight in both samples of ashed scales. Nickel was present in a similar amount in wet-ashed scales, but was absent in the dry-ashed scales. Aluminum, potassium, and silicon were present in amounts of less than 0.1 percent in the dry-ashed, but were present in slightly greater percentages in the wet-ashed scales. Strontium and magnesium were present in amounts of less than 3.0 percent in both samples. Calcium and phosphorus were present in amounts of more than 10 percent in both samples.

CONCLUSIONS

Disposal problems associated with an accumulation of waste fish scales at filleting plants have stimulated an investigation of the value of scales as a supplemental source of protein in the diets of farm animals.

As an initial study in this investigation, Snyder and Nilson (1957) conducted rat-feeding tests to compare the nutritive value for growth, the biological value for maintenance, and the digestibility of pollock-fish scale protein and a protein supplement consisting of three parts casein and one part lactalbumin (CL). They found the mean apparent digestibility of pollock-fish scale protein to be nearly 80 percent when fed to male and female rats at a 9.00-percent level in the diet. Pollock-fish scale protein was found to be completely digested, as indicated by true digestibility values, when only enough was fed to equal metabolic nitrogen. The initial amino acid analyses by paper-partition chromatography reported herein apparently supplies a reasonable explanation for this rather unexpectedly high level of digestibility of scale protein. The presence in extremely small quantities of tryptophan and cystine and in large quantities of glycine and the presence of fair amounts of hydroxyproline suggest that pollock-fish scale protein is not a keratin that would be digested with difficulty, but probably is a scleroprotein of the collagen type that would be digested easily.

This classification of fish-scale protein is not necessarily original, since Block et al in 1949, from chemical analyses alone, reported that herring scales contained a collagen-like protein. The classification of scale protein as keratin has persisted, however, probably owing to anatomical and presumed embryological considerations. Also, the studies of Block and his co-workers may not have received sufficient publicity, or perhaps, supplied enough evidence to warrant classification of fish-scale proteins as collagens. The results of the amino acid analysis presented herein and the digestibility studies presented earlier indicate rather strongly, however, that fish-scale protein is most likely a scleroprotein of the collagen type and not a keratin. These conclusions are based on interpretations of results from pollock scales only, but probably apply to scales from all species of fish.

The quantitative amino acid content found probably also explains why, in the rat-feeding study reported earlier, pollock-fish scale protein alone was not adequate for growth and why the utilization of that protein was increased when combined with stepwise higher levels of CL protein. The microbiological as well as the paper chromatographic analyses show that the pollock-fish scale protein is deficient in all the so-called essential amino acids, except arginine, and in some of the nonessential amino acids when compared to whole-egg protein. These deficiencies in essential amino acids also would explain the decreased assimilation by rats of pollock-fish scale protein as compared to CL protein.

The fact that scale protein contains nearly 40-percent glycine suggests a possible glycine imbalance or toxicity when the scales are fed at high levels. This, in turn, may cause the manifestations of other nutritional inadequacies of pollock-fish scale protein.

The results of the spectrographic analyses suggest that no unusual inorganic constituents, or great excesses, are present in pollock fish scales that would cause biological injury when fed to animals. This conclusion is also in accord with the conclusions based on results from the rat-feeding study; that is, that scales contain no toxic substances per se for growing rats.

The evidence presented herein therefore supports the conclusions arrived at from interpretations of the results of the rat-feeding study. The fact that the pollock-fish scale protein is well digested but is not utilized by rats when fed alone, and yet is increasingly better utilized when fed in combination with higher levels of CL protein, apparently is explained by classifying pollock-fish scale protein as a collagen that is deficient in many essential amino acids and imbalanced in glycine content. The results of the spectrographic analyses, in turn, do not indicate that the concentrations of the various inorganic elements are likely to cause the depression of growth that was noted when the diets containing the pollock fish scales were fed to the rats.

LITERATURE CITED

ANONYMOUS
1955. OFFICIAL METHODS OF ANALYSIS. ASSOC. OF OFF. AGR. CHEM., WASHINGTON, D. C.

BLOCK, RICHARD J.; DURRUM, EMMETT L.; AND ZWEIG, GUNTER
1955. A MANUAL OF PAPER CHROMATOGRAPHY AND PAPER ELECTROPHORESIS. ACADEMIC PRESS INC., PUBLISHERS, NEW YORK.

_____; HORWITT, M. K.; AND BOLLING, DIANA
1949. COMPARATIVE PROTEIN AND CHEMISTRY. THE COMPOSITION OF THE PROTEIN OF HUMAN TEETH AND FISH SCALES. J. DENTAL RES., VOL. 28, PP. 518-524.

BOWES, JOANE H.; ELLIOTT, R. G.; AND MOSS, J.A.
1955. THE COMPOSITION OF COLLAGEN AND ACID-SOLUBLE COLLAGEN OF BOVINE SKIN. BIOCHEM. J., VOL. 61, PP. 143-150.

CORTI, ULRICH A. AND KELLER, L.
1952. TWO-DIMENSIONAL PAPER CHROMATOGRAPHIC ANALYSIS OF FISH SCALE HYDROLYSATES AND HYDROLYSATES OF SEVERAL OTHER FISH ORGANS. SCHWEIZ Z. HYDROL., VOL. 14, PP. 336-337.

FONTAINE, M. AND BUSNEL, R. G.
1938. FLAVIN AND SUBSTANCES WITH A BLUE FLUORESCENCE IN THE SKIN OF TELEOSTEANS. COMP. REND. SOC. BIOL., VOL. 128, PP. 370-372.

GRAHAM, CLAIRE E.; WAITKOFF, HELEN K.; AND HIER, STANLEY W.
1949. THE AMINO ACID CONTENT OF SOME SCLEROPROTEINS. J. BIOL. CHEM., VOL. 177, PP. 529-532.

GROEN, L.
1953. PEARL ESSENCE. PAINT, OIL AND COLOUR JOURNAL, VOL. 124, P. 502.

HAMA, TADAO; GOTO, KAN; AND KUSHIBIKI, KENICHI
1952. PURPLE FLUORESCENT SUBSTANCES IN THE SKIN AND SCALES OF FISH. KAGAKU (SCIENCE), VOL. 22, P. 478.

HAWK, PHILIP B.; OSER, BERNARD L.; AND SUMMERSON, WILLIAM H.
1954. PRACTICAL PHYSIOLOGICAL CHEMISTRY. THE BLAKISTON COMPANY, INC., PUBLISHERS, NEW YORK.

HENDERSON, L. M. AND SNELL, ESMOND E.
1948. A UNIFORM MEDIUM FOR DETERMINATION OF AMINO ACIDS WITH VARIOUS MICOORGANISMS. J. BIOL. CHEM., VOL. 172, PP. 15-29.

NICHOLS, JOHN TREADWELL
1956. FISH SCALES. THE FISH CULTURIST, VOL. 36, P. 3.

NISHIHARA, HATASU
1954. CALCIUM OXALATE CONTENT OF FISH SCALES. SCIENCE REPORTS. SAITAMA UNIVERSITY SER. B, VOL. 1, P. 159.

OBATA, Y.; IGARASHI, H.; AND ISHIDA, M.
1950. STUDIES ON THE IRIDESCENT SUBSTANCE OF FISH SCALES. BULL. JAPAN. SOC. SCI. FISHERIES, VOL. 16, PP. 141-144.

_____ AND MARUTANI, FEIGIRO
1953. STUDIES ON THE IRIDISCENT SUBSTANCES OF FISH SCALES II. BULL. JAPAN. SOC. SCI. FISHERIES, VOL. 19, P. 639.

POLONOVSKI, MICHEL; BUSNEL, R. G.; AND PESSON, M.
1943. FLUORESCYANINE, A PIGMENT WITH BLUE FLUORESCENCE FROM THE SCALES OF CYPRINIDES. COMPT. REND. SOC. BIOL., VOL. 217, PP. 163-164.

RANDOIN, LUCIE; FONTAINE, M.; BUSNEL, R. G.; AND RAFFY, A.
1938. GROWTH FACTORS FOR THE RAT FOUND IN THE SKIN AND SCALES OF CERTAIN FISH. COMPT. REND. SOC. BIOL., VOL. 129, PP. 473-476.

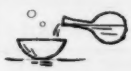
ROUTH, JOSEPH I.
1942. NUTRITIONAL STUDIES ON POWDERED WOOL. J. NUTRITION, VOL. 23, PP. 125-130.

SNYDER, DONALD G. AND NILSON, HUGO W.
1957. MANUSCRIPT PREPARED FOR PUBLICATION.

WAGNER, JOSEPH R. AND ELVEHJEM, C. A.
1942. NUTRITIVE VALUE OF KERATINS. I. POWDERED SWINE HOOFS. PROC. SOC. EXP. BIOL. MED., VOL. 51, PP. 394-396.

1943. THE NUTRITIVE VALUE OF KERATINS. II. POWDERED SWINE HOOFS IN POULTRY RATIONS. POULTRY SCIENCE, VOL. 22, PP. 275-276.

WILDER, O. H. M.; OSTBY, PAUL C.; AND GREGORY, BARBARA R.
1955. THE USE OF CHICKEN FEATHER MEAL IN FEEDS. POULTRY SCIENCE., VOL. 34, PP. 518-524.



NORTH ATLANTIC SEA SCALLOP FISHERY

Most of the scallop-fishing vessels out of New Bedford, Mass., use two dredges, each 11 feet wide. They are towed together, one from each forward gallows frame, and brought up alternately to be dumped on deck. The dredges are very sturdy so that they will stand up under the rough use that they get. A complete 11-foot dredge with 3-inch rings weighs about 1,400 pounds when empty. Some of the smaller boats with less power use 8- or 10-foot dredges and 13-foot models have been tried on the larger boats but the 11-foot dredge is now fairly standard in the New Bedford fleet. There is really no standard design for a dredge; each fishing captain has his own ideas on what makes for efficient gear and modifies and alters the basic design to suit himself.

--Fishery Leaflet 442, Sea Scallop Boats and Gear, August 1957.

GLOUCESTER'S TRAWL FISHERY FOR INDUSTRIAL FISH

By Robert L. Edwards*

DISCUSSION AND SUMMARY

The Gloucester trawl industrial fishery is based primarily on a whiting economy, in contrast to that of southern New England which is based on a flounder economy. Red hake are the principal species landed for reduction at Gloucester, with whiting ranking second in quantity. On southern New England grounds, skates make up a considerable portion of the trawl industrial landings, but in the Gulf of Maine, several species, depending on area and season, take third place. These include the angler, eelpout, and alewife. Only very small quantities of food fish are landed in the industrial catch at New Bedford and Pt. Judith from southern grounds while consistent small percentages of haddock, dab, and white hake show up in Gulf of Maine landings.

Fig. 1 - The three principal areas fished by Gloucester trawl fleet fishing for industrial fish.

The term "industrial fish" as used here refers to those species commonly taken by trawlers and referred to as "trash fish." They are taken along with desired food species and sold separately for reduction to fishery byproducts or meal plants.

Menhaden are industrial fish in the strict sense of the word, but they are the object of a highly specialized purse-seine fishery and they are not covered in this article. Because of their high oil content, reduction plants prefer menhaden since they yield both meal and oil. Industrial trawl fish are useful only as a source of meal because they contain only very small amounts of oil.

The trawl fishery for industrial fish started in Gloucester as elsewhere in New England in 1949. The Gloucester landings of this fishery have not been very consistent or large, although in recent years a slow but steady increase has occurred. As a result of the very poor landings of menhaden in 1957, the Gloucester landings of trawl industrial fish more than doubled, amounting to over 37 million pounds (see table 1). During this same year, over 42 million pounds were landed at New Bedford and almost 100 million pounds landed at Pt. Judith.

Table 1 - Gloucester Trawl Industrial Fish and Menhaden Landings by Month, 1955 to 1957

Months	1957		1956		1955	
	Trawl Fish	Menhaden	Trawl Fish	Menhaden	Trawl Fish	Menhaden
	(1,000 Lbs.)					
January	127		100		421	
February	65		24		344	
March	25		54		66	
April	8		100		272	
May	1,762		735		2,110	
June	3,330	1,513	1,775	8,384	609	5,558
July	4,540	13,300	1,100	36,236	254	20,577
August	6,117	3,577	2,175	17,832	2,925	21,371
September	7,454	2,311	3,348	3,957	1,399	12,672
October	7,362		2,009		2,519	1,102
November	5,500		2,400		2,022	
December	1,351		2,163		1,290	
Totals	37,641	20,701	15,983	66,409	14,224	61,280

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The Gulf of Maine and southern New England trawl industrial fisheries differ in their emphasis on food species. In general, the southern New England fishery is based on a flounder economy, directing its effort toward the capture of yellowtail flounder, fluke, and blackback flounder, in addition to red hake and other "trash" species. The Gloucester whiting-industrial fishery is primarily for whiting with secondary interest in such groundfish as haddock, cod, white hake, and pollock. The Gloucester whiting-industrial fishery may be said to be based on a whiting economy.

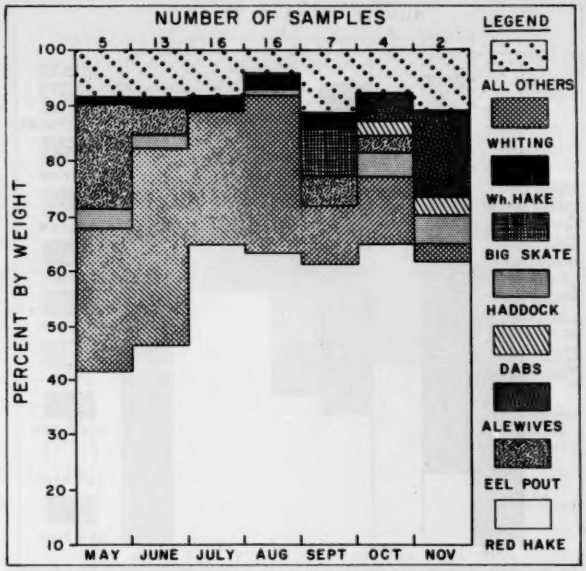

Fig. 2 - Percentage by weight species composition of trawl industrial fish landings at Gloucester from the Nauset area. Data for 1956 and 1957 have been combined.

FISHING AREAS

The trawl industrial fish landed at Gloucester are mainly taken from three grounds (see fig. 1), the Nauset area along Cape Cod's outer shore, Stellwagen Bank, and the local grounds around Cape Ann. The location of the fleet depends upon weather, the season, and the relative abundance of fish, especially whiting. Although the fleet is occasionally found concentrated on the local Gloucester grounds or Stellwagen Bank, the Nauset area contributes 80-90 percent of the total landings. Stellwagen Bank contributes the second largest share, and the local Gloucester grounds contribute the least.

If the demand for trawl industrial fish continues to increase, the amount of fishing on these various grounds will certainly change, and additional areas will be exploited to supply this demand. Concentrations of red hake will be sought in addition to whiting.

Table 2 - Percentage by Weight of Species Composition of the Trawl Industrial Fish Landings at Gloucester from the Three Principal Areas for the Entire Period for Which Information is Available

Species	Area and Period Covered		
	Nauset (May-Nov.)	Stellwagen (June-Jan.)	Gloucester (May-Nov.)
Red hake	57.5	33.6	43.9
Whiting	21.7	39.1	13.3
Eelpout	5.1	1.6	2.6
Alewife	3.4	2.6	9.3
Haddock	2.7	1.8	2.9
Herring	2.7	2.2	2.0
White hake	1.7	1.0	0.8
Big skate	1.6	-	0.5
Spiny dogfish	1.5	1.9	3.0
Dab	1.1	5.1	3.7
Little skate	0.4	0.5	1.0
Longhorn sculpin	0.4	0.3	0.2
Shad	0.3	0.2	2.0
Sea raven	0.3	0.1	-
Barndoor	0.2	0.1	2.2
Fourspot flounder	0.1	-	-
Rockling	0.1	2.1	0.3
Yellowtail	0.1	-	-
Cod	0.1	0.1	0.3
Sea eel	0.1	0.6	-
Ocean perch	0.1	1.2	1.3
Pollock	0.1	0.1	-
All others	0.3	0.5	0.1
Angler	-	4.3	10.2
Blackback		0.1	0.2
Grey sole	-	0.5	0.2
Number of Samples	63	21	20

SPECIES COMPOSITION

The species composition of the landings is presented graphically for each fishing ground (figs. 2-4). Upwards of 20 species may be included in individual catches in significant quantities, depending on the season and the area fished. To keep the graphs reasonably simple, only those species that appear consistently and in some quantity are plotted. The "all others" category on the graphs does not include significant quantities of species of particular interest here.

Figure 2, the percentage by weight of species composition of landings from the Nauset area, indicates that the red hake (Urophycis chuss) makes up the bulk of the fish landed, being approximately 55 percent of the total for the entire period.

The whiting, or silver hake (Merluccius eilinearis), makes up about 22 percent of the landings, with the eelpout (Macrozoarces americanus) ranking as a poor third, or about 5 percent of the total. It should be observed that only three food species (other than whiting), haddock (Melanogrammus aegelefinus), dab (Hippoglossoides platessoides), and white hake (Urophycis tenuis) appear in any number and constitute only a very small part of the landings, in all less than 6 percent.

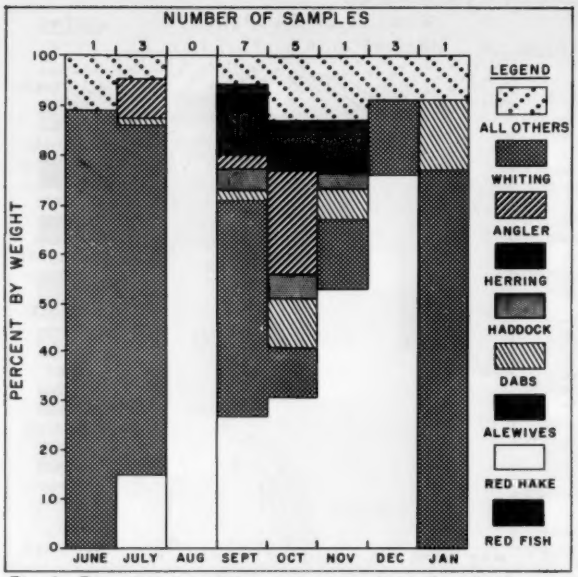

Fig. 3 - Percentage by weight species composition of trawl industrial fish landings at Gloucester from Stellwagen Bank. Data for 1956 and 1957 have been combined.

The composition of the landings from Stellwagen Bank (fig. 3) is quite different. Red hake do not make up the bulk of the landings until fall and early winter in sharp contrast to the other areas. Whiting dominate the catch in the summer and fall. The red hake and whiting together make up approximately 73 percent of the total catch. Dabs are present in significant quantities, making up about 5 percent of the total landings. The white hake and haddock appear consistently but make up a very small part of the total catch.

The local Gloucester grounds, Ipswich Bay, Isle of Shoals, Thatchers (fig. 4), and other nearby fishing grounds present roughly the same picture as that of the Nauset area. Red hake predominate, making up about 45 percent of the total, whiting are second in quantity, contributing about 13 percent to the catch. Angler (Lophius americanus) are in third place, making up about 10 percent of the total. Dabs and haddock together make up a consistent but relatively small (about 6 percent) contribution to the total catch.

Table 3 - Catch per Hour of Trawl Industrial Fish, Round Whiting, and Other Food Fish by the Gloucester Fleet on Nauset Grounds. Data for 1956 and 1957 are Combined

Month	No. of Trips	Catch Per Hour			Average Catch per Trip and Percentage of Total Trip					
		Industrial	Round Whiting	All Other Food Species	Industrial		Round Whiting		All Other Food Species	
		(Pounds)			Lbs.	Percent	Lbs.	Percent	Lbs.	Percent
May	34	1,600	1,450	120	30,500	50.4	27,500	45.5	2,500	4.6
June	31	4,080	2,130	100	46,200	64.6	24,200	33.8	1,100	1.6
July	35	7,720	360	240	78,700	92.4	3,700	4.3	2,800	3.3
August	36	4,930	1,170	50	56,600	80.2	13,400	19.0	600	0.9
September	71	3,050	1,590	180	39,000	63.4	20,300	33.0	2,300	3.7
October	26	2,180	1,130	370	31,300	63.2	14,500	29.4	3,700	7.5
November	38	1,440	890	330	24,600	54.4	15,200	33.5	5,500	12.2

Table 2 lists the percentages by weight of all species landed as trawl industrial fish from each of the three areas discussed. These figures are based on all the samples available and are not weighted according to the landings of individual months. They represent only an approximation, therefore, of the actual breakdown in percentage by weight of the landings.

The species composition picture presented for these grounds differs considerably from that of the landings at New Bedford and Pt. Judith (Edwards and Lux 1938). In southern New England waters, red hake are clearly the predominant species for almost the entire year. On the average, they make up over 60 percent of the entire

catch. Whiting rank second, about 20 percent. Little skate (Raja erinacea) and its relatives, big skate (R. ocellata), and the barndoor skate (R. laevis), make up about 10 percent of the total, in sharp contrast to the Gloucester landings.

ABUNDANCE

Adequate interviewing for abundance studies began in Gloucester early in 1956, The interviewers obtained information for each trip, on the number of tows made and the average length of tow. The catch per unit of effort was obtained by simply dividing the landings by the actual number of hours that the net was fishing. The fleet is made up mostly of vessels with an average gross tonnage of about 50 tons, and no corrections were made (or were felt necessary at this stage) for individual boats, actual vessel size, or gear. Since most of the landings come from the Nauset area, the following discussions will be limited to that area.

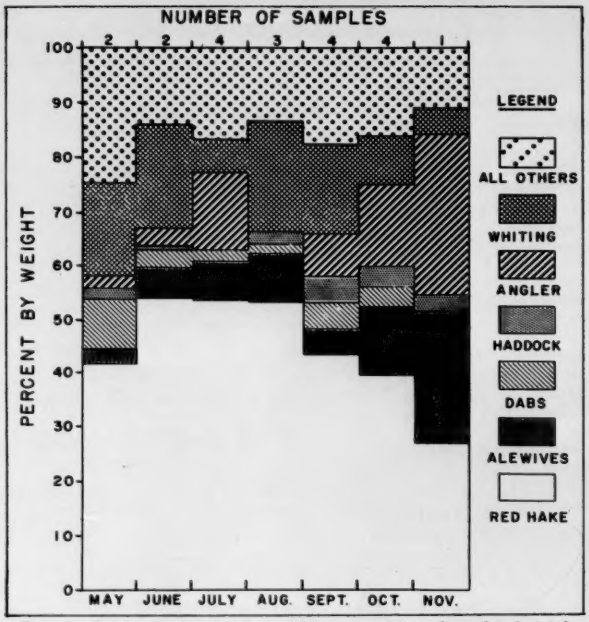

Fig. 4 - Percentage by weight species composition of trawl industrial fish landings at Gloucester from the local Gloucester grounds. Data for 1956 and 1957 have been combined.

Figure 5 shows the seasonal variation in abundance as measured by catch in pounds per hour for the period May through November. All data available for 1956 and 1957 have been combined to elicit the general seasonal pattern. A fisherman may expect to catch about 4,000 pounds per hour in May, with the catch increasing rapidly to over 8,000 pounds per hour in July. The decline in August and early September to about 6,000 pounds per hour is followed by a low level of 2,500 pounds per hour in October and November.

Figure 6 demonstrates that two species, red hake and whiting, account for most of the significant changes observed. The changes in the abundance of red hake are marked and reflect all of the general changes in figure 5. Red hake reach their peak of abundance in July (fig. 6), when the average vessel catch is about 5,000 pounds an hour. Whiting catches of over 3,000 pounds an hour were made in June. In general, whiting are present at levels of at least 1,000 pounds an hour, usually more.

The graph of the catch per hour of whiting (fig. 6) includes both the fish landed for reduction and as human food. Figure 6 also demonstrates that the proportion of whiting landed for reduction is directly related to the abundance of red hake rather than to the whiting's own level of abundance. In figure 6 the industrial portion of the whiting catch expressed in percentage of the total whiting catch is plotted against the catch per hour of red hake. As the catch of red hake increases, it is easier to get a full boatland more quickly, and a fisherman needs to do less culling of fish of higher value to have a successful trip. When "trash fish" are abundant a good trip can be made very quickly. Apparently, the price differential is not sufficient to make it worthwhile for the fishermen to cull out the whiting intensively for the food market under these conditions.

The over-all picture of the Nauset landings is summarized in table 3. Here listed are the statistics on the various portions of the catch for the months of May through November. It should be noted that the number of trips is not the total number made during this period but represents only those trips for which adequate interview data were available to perform the analysis.

Table 4 - Landings of Food Fish by the Gloucester Whiting-Industrial Fish Fleet in September 1956. Total Quantity Landed, Catch Per Hour, and Average Catch Per Trip of Food Species (by Market Category)

Species	Sept. 1-10 15 Trips, 195.5 Hours Fishing			Sept. 1-10 24 Trips, 299.5 Hours Fishing			Sept. 21-30 15 Trips, 242 Hours Fishing			Totals for Month 54 Trips, 737 Hours Fishing		
	Total Landings	Catch per Hour	Trip Average	Total Landings	Catch per Hour	Trip Average	Total Landings	Catch per Hour	Trip Average	Total Landings	Catch per Hour	Trip Average
	(Pounds)			(Pounds)			(Pounds)			(Pounds)		
Round whiting	148,900	761.6	9,900.0	734,200	2,364.5	30,600.0	357,000	1,477.3	23,800.0	1,240,600	1,683.3	21,700.0
Cod:												
Large	400	2.05	26.7	580	1.9	2.4	360	1.49	24.0	1,340	1.82	24.8
Market	2,675	13.68	178.4	2,425	8.10	101.0	1,850	7.64	123.3	6,950	9.43	128.7
Haddock:												
Large	1,720	8.80	114.7	7,218	24.10	300.8	12,865	53.16	857.7	21,803	29.58	403.8
Scrod	5,650	28.90	376.7	16,205	53.50	675.2	34,265	141.59	2,284.3	56,120	76.15	1,039.3
White hake:												
Large	315	1.61	21.0	30	0.10	1.2	-	-	-	345	0.47	6.4
Market	990	5.06	66.0	2,810	9.38	117.1	2,800	11.57	186.7	6,600	8.96	122.2
Pollock	1,355	6.93	90.3	2,810	9.38	117.1	3,125	12.91	208.3	6,660	9.04	123.3
Gray sole	-	-	-	330	1.10	13.8	3,470	14.34	231.3	3,800	5.16	70.4
Dabs	10	0.05	0.7	560	1.87	23.3	485	2.00	32.3	1,055	1.43	19.5
Yellowtail	125	0.64	8.3	-	-	-	-	-	-	125	0.17	2.3
Butterfish	-	-	-	600	2.00	25.0	250	1.03	16.7	850	1.15	15.7

FOOD-FISH LANDINGS

The month of September 1956 has been chosen to illustrate the nature of the food-fish landings from the Nauset grounds because of an abundance of data and because they illustrate some important problems associated with this fishery. The data were broken down into three periods and are summarized in table 4. The average boat, aside from its industrial catch, lands more whiting than anything else. Various gadoids, haddock, cod, white hake, and pollock make up most of the rest of the food-fish hails. Flounders make up only a small percentage of the total.

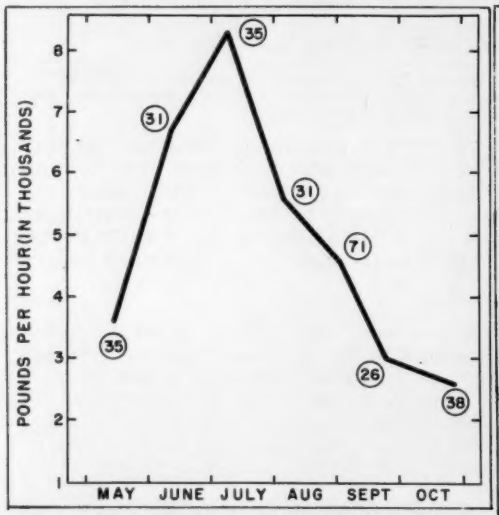

Fig. 5 - Catch per hour of all species on the Nauset grounds for May through November. Number of interviewed trips for each period is circled. Data for 1956 and 1957 have been combined.

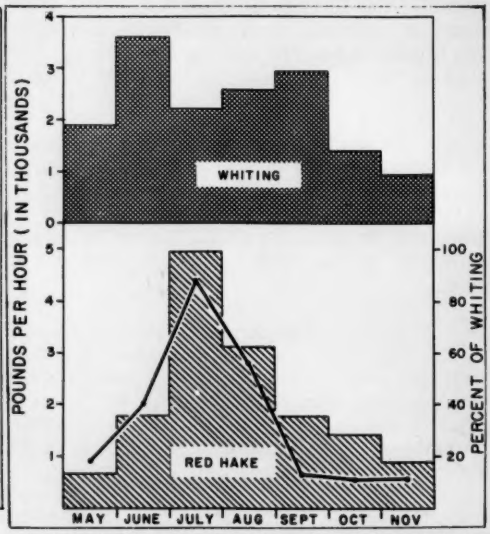

Fig. 6 - Catch in pounds per hour of red hake and whiting in Gloucester landings from the Nauset area. Whiting data are based on the amount landed for reduction plus that landed as food. Data are for May through November. Data for 1956 and 1957 have been combined. Superimposed on the red hake histogram is the graph of the percentage of the total whiting catch sold for reduction.

Landings of both market categories of cod--large and market--decreased during September 1956. The average monthly catch per hour was 9.43 pounds for market, decreasing from 13.68 pounds for the first ten days to 7.64 pounds for the last ten days of the month. While landings of large white hake in September 1956 decreased from a catch per hour of 1.61 pounds to nothing, market hake substantially increased, in fact landings doubled from the first to the last period. A curious fact worthy of further study is the similarity between the catches per hour of the white hake and the pollock. The gray sole and dab catches both substantially increased, while yellowtail flounder was captured only during the first 10-day period.

The amount of whiting landed for reduction by the trawl industrial fleet at Gloucester is directly related to the abundance of red hake rather than to the abundance of whiting itself. This situation is probably caused by the relatively small price differential between whiting and industrial fish.

The trawl industrial fishery also lands various groundfish for the food market, including haddock, cod, white hake, pollock, dab, yellowtail, and gray sole.

Only small percentages of valuable food species are going to the reduction plants at this time. An expansion of Gloucester's trawl industrial fishery should be possible without foreseeable undue impact on the stocks of valuable food species, considering present practices. The whiting is a possible exception to this since it is in demand for both food and reduction.

The data for haddock are particularly interesting, the catch per hour increasing markedly for both categories. During the last 10-day period the average trip of the two market categories of haddock combined was in excess of 3,000 pounds, in contrast to only 500 pounds during the first 10 days.

LITERATURE CITED

Edwards, Robert L. and Lux, Fred E.
1958. New England's Industrial Fishery. Commercial Fisheries Review, vol. 20, No.5 (May), pp. 1-6. (Also Separate No. 509.)

NEW PACKAGING TECHNIQUE INVOLVES AROMATIC PACKING

Inasmuch as increased attention is being given to improving packaging techniques such as containers and wrappings, the fishery trade may be interested in a recent report concerning the development of aromatic packaging for foods. According to a prominent food trade journal, preliminary steps have been taken by at least two large food manufacturing corporations to develop aromatic packaging materials. Although this is still in the trial stage, it indicates another step toward customer appeal on the part of packaging manufacturers and food merchandisers.

While the report made no specific reference to the use of this new type of packaging as far as fishery products are concerned, it certainly is something that the fishery trade should watch for possible application.

INSPECTION AND CERTIFICATION OF FISHERY PRODUCTS BY U. S. DEPARTMENT OF THE INTERIOR

INTERIOR BEGINS INSPECTION OF FISHERY PRODUCTS: Inspection and grading services for fishery products became the responsibility of the U. S. Department of the Interior on July 1, 1958. These responsibilities were recently transferred from the Department of Agriculture by the Bureau of the Budget in accordance with the Fish and Wildlife Act of 1956. Regulations to govern the grading and inspection services as a function of the Department of the Interior were adopted by that Department on June 30. 1/

Inspection and grading services are available on a fee basis to processors who meet the existing voluntary Federal standards of quality for fishery products. The standards are devised by the Bureau of Commercial Fisheries, United States Fish and Wildlife Service, and were previously made effective by the Department of Agriculture. After July 1, promulgation of voluntary United States standards for fishery products will also be made by the Department of the Interior. Standards in effect at present are for fish sticks, fish blocks from which the sticks are cut, and frozen raw breaded shrimp. Inspection services are also available to assure wholesomeness of the product and conformity to written specifications for fishery products not presently covered by established standards.

Fishery products labels referring to the Department of Agriculture inspection services will be approved by the Department of the Interior for continued use until

PROCESSED FOODS INSPECTION
STANDARDIZATION and INSPECTION
Promote
MARKETING CONFIDENCE
U.S. GRADE A
U.S. GRADE A
FANCY
• Aid in packing better and more uniform quality foods.
• Provide a uniform basis for sales transactions.
• Promote fair practices among processors.
• Facilitate financing with loan agencies and warehouses.
FROZEN PREFRIED BREADED FISH STICKS
U.S. DEPARTMENT OF
FISH AND WILDLIFE

the supply is exhausted. The Federal shield will continue to be the background for the quality label under the Department of the Interior. There will be no essential change in the label declarations nor in the operations of the inspection and certification service.

Ten employees of the Department of Agriculture who have been engaged in fishery products inspection have been transferred to the Bureau of Commercial Fisheries which reassigned them to their posts in the New England States.

1/See p. 93 of this issue.

An additional inspection corps of six persons was given specialized training necessary to perform this service. They were assigned where needed, mostly in the South Atlantic and Gulf States.

THREE TYPES OF INSPECTION SERVICES: At the present time there are three types of inspection services available to interested parties:

1. Continuous Inspection: This service provides that an inspector or inspectors be stationed at the plant during all shifts of the processing operation. He will check (a) plant personnel and equipment for sanitation, (b) the raw material for wholesomeness, (c) the processing of the finished product, and (d) select finished product samples for grading. When the final inspection of the finished product is made he will issue certificates attesting to the grade or quality and condition of the lot. He also furnishes the plant management with a daily inspection report commenting on the sanitary conditions and the results of the products inspected.

Continuous inspection services assure the processor and purchaser of satisfactory compliance with the requirements for wholesomeness of the raw materials used and of sanitation established for the handling and processing operations. The processor, in such case, may label his product as being packed under continuous inspection. Several prescribed labeling forms are available.

Costs of continuous inspection are nominal, averaging between $7,000 and $9,000 a year. Usually the costs are at the lower end of the range. Final decisions as to costs are reached through the negotiation of administrative contracts between the processor and the appropriate Government agency. Continuous inspection is necessary if the processor wishes to grade-label his product.

Applicants for continuous inspection must conform to certain basic requirements as to health of employees, plant arrangement, and processing techniques. These requirements are primarily intended to facilitate application of sanitary procedures. Minimum, sensible regulations as to health of employees are prescribed. Blueprints of the plant layout are studied and a plant survey made prior to suggestion of any changes which may be necessary in processing techniques. A suitable space for use by the inspector, as an office and laboratory, must be provided. Equipment cleaning requirements are sensible and realistic.

The continuous inspection is based on use of the applicable U. S. Standards of grades for the particular product, if promulgated, or upon Federal, Military Quartermaster Corps, Veterans Administration, or other suitable and satisfactory sets of specifications. Grading services, if applicable and requested, are rendered by the inspector as well. In the latter case, the pack may be distinctively labeled as to grade and to the fact that it was produced under continuous inspection.

The values received from continuous inspection are not alone those of assurance of wholesomeness and quality in the product and the advertising value of the inspection service seal where used. The resident inspector is a source of ideas, of advice and, when his duties permit, of assistance to the research staff at the plant.

2. Lot Sampling: The inspector or official sampler draws random samples from specific lots specified by the interested party. The samples are examined to determine compliance to a Federal Standard or Specification or to any specification approved by the Bureau. An official certificate is issued denoting the grade or quality and condition of the lot.

Any interested person may request the services of an inspector for the sampling, grading or loading of a specific lot of a product. The costs average $4.50 per hour, which includes travel time. Such services will be given provided an inspector is available and the facilities and working conditions at the point of inspection

are satisfactory. The addresses of the inspectors nearest to your plant may be obtained from the local U. S. Bureau of Commercial Fisheries representative.

Oral requests may be made for inspection services, but should be confirmed immediately in writing. An application should include: (1) the name of the product to be inspected, (2) name and address of packer, (3) location of product to be tested, (4) its lot or car number, (5) codes or other identification marks, (6) the number of containers, (7) the type and size of containers, (8) the interest of the applicant in the product, (9) whether the lot has been inspected previous to the application by any Federal agency, and (10) the purpose for which inspection is desired.

Inspection services may be performed on the basis of the appropriate U. S. standards for grades of fishery products; Federal, Military, Quartermaster Corps or Veterans Administration specifications; written buyer and seller contract specifications; or any specification which is supplied by the applicant and is of acceptable content.

If the inspector, or a duly authorized and licensed representative, personally samples the lot presented for inspection, he may so attest by issuing a certificate of sampling.

Normally, the inspector will then certify the product on an official document as to (1) quality, (2) condition, or (3) both quality and condition, depending upon the service requested. In addition, an inspector may, upon request, check the loading of a specific lot of fishery products. He will then attest, by an official certificate of loading, that a certain specific lot was loaded, that packing and icing procedures, as applicable, were of a certain nature, and that the car was officially sealed. The certificates of sampling, inspection and of loading constitute a complete assurance that the product, at time of loading, was of the grade requested and was shipped in accordance with instructions. Reports are promptly prepared and forwarded to the applicant. In certain cases, telegraphic reports, at the request and expense of the applicant, may be made prior to preparation of the official documents.

Since, usually, no certain knowledge as to compliance with sanitary and processing requirements is available to the inspector, the lot so inspected may not be labeled as to grade on the individual package. It may, however, be so advertised in accompanying material. Further, the master cartons are stamped with an official seal attesting to the fact of official sampling by an accredited inspector. The carton stamp and grade certificate then constitute an assurance as to product quality when forwarded.

3. Unofficial Samples: This service consists of examining samples as described in Lot Sampling, submitted by an interested party. A certificate is issued concerning the particular samples examined.

Inspections can cover factors other than quality of the product that are necessary to give the applicant an accurate description of the quality and condition of the samples. Factors having a bearing on the market value of the product are considered, such as condition of the labels and packaging. A special analysis also can be made upon request.

RELATION OF LABELING TO STANDARDS AND INSPECTION: Any Packer may label his products Grade A, Grade B, etc., provided that they comply with the requirements of the grades set forth in the United States standards for the product. But only fishery products packed under continuous inspection of the U. S. Department of the Interior (U. S. D. I.) may include "U. S." before the grade designation. The packer and distributor are both responsible for the accuracy of statements on the labels. If the products are not of the grade claimed, the packer and distributor are subject to penalties for misbranding under the Federal Food, Drug and Cosmetic

Act. Those interested in the official grade marks permitted by the U. S. Department of the Interior should refer to the U. S. D. I. Regulations governing Inspection and Certification of processed Fishery Products, promulgated by the Secretary of the Interior in the Federal Register of July 3, 1958. 1/

COSTS OF INSPECTION SERVICES: Fees are charged for inspection and grading services to reimburse the Federal Government as nearly as possible for the actual cost. The fee is paid to the Treasurer of the United States through the Bureau's Regional Offices.

Applicants and persons interested in receiving information concerning the inspection and certification of fishery products should write to one of the following addresses:

(1) Chief, Branch of Technology, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

(2) Chief, North Atlantic Technological Research, Fishery Technological Laboratory, U. S. Bureau of Commercial Fisheries, 61 Sumner Street, East Boston 28, Mass.

(3) Chief, Middle and South Atlantic Technological Research, Fishery Technological Laboratory, U. S. Bureau of Commercial Fisheries, Post Office Box 128, College Park, Md.

HOW VOLUNTARY U. S. STANDARDS FOR FISHERY PRODUCTS ARE DEVELOPED: Owing to the critical shortage of technical manpower and to the multitude of fishery products, a system has been developed to organize the process of development of individual fishery products standards along orderly economical lines. The system used at present is as follows:

The first requirement is the full realization on the part of industry of the need for standards for a particular product. The National Fisheries Institute, under the terms of its contract with the Bureau of Commercial Fisheries, has acted as liaison agent between industry and Government, making standards information available to the former and advising the latter as to the desires of the industry. The benefits of standards in promoting orderly marketing procedures are pointed out to the industry members.

An industry statement is forwarded to the Secretary of the Interior requesting that such development work be initiated. Such a request should represent the thinking of a substantial portion of the processors producing the particular product for which the standards are desired. The product, in addition, should be one of such relative importance in the fisheries industry as to justify the expenditure by the Department of moneys and of valuable scientific manpower.

After acceptance of the request by the Secretary of the Interior, the project is scheduled for initiation as soon as availability of funds and manpower permit. Qualified technical people in the industry are requested to furnish such information as they may possess. Industry members at the policy level are contacted as to the acceptability of proposed requirements to prevent inclusion of unrealistic features in the standards.

The area technical people work with the designated Service representative to establish the principal quality factors of the product together with an assessment of the relative importance of these factors. Information on regional industrial techniques of evaluation according to quality gradations is included for study and for incorporation, if found applicable, in the standards.

1/ See p. 93 of this issue.

Ancillary standards for product-related matters, such as packing or packaging, may be developed if considered necessary to the success of the standards of quality. Information as to product forms, sanitation requirements, handling, processing and distribution techniques is necessary to develop intelligently a realistic set of standards.

The industry policy group advises on the general acceptability of the tentative requirements of the provisional draft of standards and inspectors handbook as developed from the information supplied by the industry technical committee and by the Bureau's technological laboratories. The recommendations of the groups are considered and revisions deemed necessary are made.

The proposed voluntary U. S. standards are submitted for promulgation in the Federal Register in the form of a Notice of Proposed Rule Making. A 30-day period for further industry comments is then allowed prior to insertion in the Federal Register of a Notice of Final Rule Making. On the effective date of this Notice the standards become an official documentation of the definition of a product and of its several grades of quality and condition. The procedures of development, throughout, are such as result in the utmost cooperation between industry and Government. Standards, so developed, reflect the earnest desire of the industry for enhanced quality, and yet, are realistic and capable of being applied under commercial conditions.

IRRADIATED FOODS--A GLIMPSE IN THE FUTURE

In 1954 the United States Quartermaster Corps, in cooperation with several other government agencies, began investigating the possibilities of a new method of food processing--irradiation of foods with gamma rays. Foods given a proper dosage of gamma rays can remain at ordinary storage temperature for longer periods of time without spoiling. Low amounts of radiation inhibit the sprouting of potatoes, carrots, and onions. A slightly higher dosage controls trichina in pork. The higher the dosage the more spoilage microorganisms are destroyed.

When the food has gone through a radiation bath and is deemed safe for shipment, it goes to Army installations and universities which further test the food for flavor, toxicity, and radiation. At present, only volunteers have tested these irradiated foods and have found no harmful consequences.

This new process of food preservation is a glimpse into the future that the Army is hoping will prove successful. Among other irradiated foods that have shown promise at the close of 1957 are blanched scallops, halibut, oysters, and shrimp.

RESEARCH IN SERVICE LABORATORIES

CHANGES IN COMPOSITION OF SOLE DURING REFRIGERATION

ABSTRACT

Extensive changes in mineral content of the meat of fish take place during the storage of the fish in ice and in refrigerated brine. In the present report, changes in the composition of sand sole and English sole are discussed.

INTRODUCTION

Changes in composition taking place in the meat of fish under various conditions of storage now are being studied at the Bureau's Seattle Fishery Technological Laboratory. In particular, the effects of ice and chilled brine are being investigated. A report on analyses of Puget Sound pink salmon is being prepared, and analyses of other species will be reported upon as results become available. The present paper reports on analyses of sand sole (Psettichthys melanostictus) and English sole (Parophrys vetulus).

Fig. 1 - Ashing sample of fish.

EXPERIMENTAL

In this section is discussed the method of preparing the samples and the analytical procedures employed.

PREPARATION OF SAMPLES: Sand sole and English sole, caught in Puget Sound waters by School of Fisheries personnel on the University of Washington exploratory vessel The Commando, were stored in ice on board the vessel until landed at Seattle.

The fish then were treated in two different ways. Some of the fish from each species were filleted, and the fillets were ground and sealed under vacuum in individual half-pound salmon cans. The cans were stored at 0° F. until the contents were analyzed. The remaining fish were placed in plastic bags containing a 3-percent solution of sodium chloride (common salt) in the ratio of two parts of fish to one part of brine, by weight. The bags were sealed, immersed in a 3-percent solution of chilled sodium chloride, and kept at 30° F. Samples were removed at intervals of about 3 days for a period of 2 to 3 weeks. Fillets were taken from these samples, organoleptically examined, and prepared and stored as above.

ANALYTICAL PROCEDURES: The cans containing the samples from both of these groups were placed in lukewarm water for about 30 minutes to soften the contents. The cans were opened, and 40-gram portions then were removed, reground in a high-speed grinder, and placed in plastic weighing bottles.

Analyses for moisture, oil, protein, and ash were made according to standard methods of the Association of Official Agricultural Chemists (1955). The ash samples were analyzed for sodium and potassium by the procedure developed in the research laboratory of the National Canners Association (1956).

DISCUSSION OF RESULTS

The sole had the typical composition of a flat fish: namely, about 81 percent moisture, about 18 percent protein, less than 1 percent oil, and a little more than 1 percent ash. The content of sodium and potassium averaged about 60 and 350 milligrams, respectively, per 100 grams of sample. The content of moisture, oil, and protein showed only slight variation during storage under these two types of refrigeration. After storage in ice, the meat showed a large decrease in potassium and in ash and a slight decrease in sodium. The meat, when stored in refrigerated brine, took up relatively large quantities of sodium, and its content of ash was increased by about one-half. Potassium showed an apparent loss of about one-fourth of its original value. This decrease was due, in part at least, to the fact that the large increase in sodium gave so much more total ash that the relative percentage of potassium was much less, although there undoubtedly was some actual leaching of potassium. Compared with data for other species where the brine-to-fish ratio was much higher, the uptake of sodium for the sole stored in refrigeration brine was much less. Thus, it would appear that the gain in sodium content can be controlled to quite an extent by maintaining a high fish-to-brine ratio.

CONCLUSIONS

Studies on composition of sole reveal that there is extensive leaching of minerals during storage in ice. Storage in refrigerated brine involves excessive uptake of sodium. The degree of absorption can be controlled to some extent by regulating the weight ratio of fish to brine.

LITERATURE CITED

ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS
1955. Official Methods of Analysis. Eighth edition. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C., pp. 310 (18.5), 311 (18.12), 12 (2.23), 534 (29.12).

NATIONAL CANNERS ASSOCIATION RESEARCH LABORATORY
1956. A Laboratory Manual for the Canning of Food. National Canners Association, 1133 20th St. NW., Washington 6, D. C., Chapter 20, p. 50.

--By Claude E. Thurston, Chemist,
Fishery Technological Laboratory,
Division of Industrial Research and Services,
U. S. Bureau of Commercial Fisheries,
Seattle 2, Wash.

BACTERIAL CONTENT OF PROCESSED SHRIMP UNDER STUDY

A survey of the bacterial content of raw headless and raw breaded shrimp will be conducted by private research firms located in Baltimore, Md., and Washington, D. C., under contracts awarded by the U. S. Bureau of Commercial Fisheries. The survey will attempt to pinpoint stages in the production-distribution chain where quality deterioration occurs. Sampling will begin at the retail level and may be

carried back to the processing level as the survey progresses. All sampling will be done by technologists of the Bureau, while the bacterial studies will be made by the private research firms.

FISH STICK QUALITY IMPROVED BY BETTER PACKAGING

The loss of quality in fish sticks during frozen storage at 0° to -5° F. can be related to the quality of the packaging materials used. The use of overwrapping materials with a low rate of moisture-vapor transmission results in an extension of the shelf life of the frozen product.

These results were obtained from tests to determine the effect of improved packaging materials on the quality of the frozen fried fish sticks, conducted at the U. S. Bureau of Commercial Fisheries, Technological Laboratory in East Boston, Mass. In this study packages of fried fish sticks were overwrapped with commercial packaging materials consisting of (1) waxed glassine paper, (2) waxed bleached sulfite paper, (3) aluminum foil-paper-polyethylene laminate, and (4) MSAT cellophane. The samples were stored in a commercial-type cold-storage room at temperatures of 0° to -5° F. for 12 months.

Results of taste-panel tests showed that after 12 months of frozen storage the fish sticks overwrapped with waxed bleached sulfite paper, aluminum foil laminate, or MSAT cellophane had lost little weight and were still of good quality. However, the samples overwrapped with waxed glassine paper were dehydrated due to excessive moisture loss and were of only fair quality.

Average weight losses for the various samples after 12 months of frozen storage were (1) aluminum foil laminate, 0.28 percent; (2) cellophane, 0.93 percent; (3) waxed sulfite paper, 1.20 percent; and (4) waxed glassine paper, 4.9 percent.

OXIDATIVE ENZYMES IN FISH TISSUE

A study is being made of the oxidative enzymes of fish as part of a collaborative research project between the Department of Food Technology of the University of California and the Seattle Fishery Technological Laboratory. Knowledge of such enzymes is of value in two areas of interest to fishery technologists: (1) the nature and properties of enzymes that are active after the death of the fish and (2) the enzymes and pathways of intermediary metabolism in fish.

Enzymes, the chemical catalyts which aid in the metabolism of foods, for instance, must be studied at a basic biochemical level in order to establish a foundation for sound subsequent research at the applied level.

The action of the enzymes in fish tissue is important both to the life processes of the fish and to the changes that take place in the fish after death. A knowledge of the intermediary metabolism of fish would help research workers to understand the details of the enzymatic reactions involved both in the synthesis and in the breakdown of proteins, fats, and carbohydrates. The potential applications of this knowledge are in the fields of fish nutrition and in improved commercial handling of fish and fishery products.

The nature and properties of the enzymes that are active after death are important because of their potential effect on fish held in refrigerated storage. The

potential changes may be either detrimental or beneficial to the final product. In either case, an understanding of these changes is necessary if they are to be controlled.

Early in the collaborative investigations, it became apparent that knowledge of the fundamental pathways of metabolism in live fish was essential to understanding the actions of the surviving enzymes. The work therefore has been concentrated on the enzymes of intermediary metabolism of fish, with emphasis on oxidative enzymes.

Carp were used as the test fish in the investigations because they are available and relatively easy to maintain in aquaria.

The initial approach to the problem was to compare directly the reactions caused by the enzymes in fish with those caused by the enzymes in mammals. The research to date has been concentrated in the areas of carbohydrate metabolism and of fatty acid metabolism. Results now available indicate that the tricarboxylic acid cycles of carhohydrate metabolism in fish is similar to that in other animals.

The multienzyme system that causes the oxidation of fatty acids in fish tissue was studied in detail. In general, the behavior of this system has been found to resemble that observed in mammals, but with some differences in detail.

The work now in progress essentially is an extension of the work already reported. Because of the importance of the unsaturated fatty acids in fish, both in terms of nutritional value and as a possible source of rancidity, the investigation of the oxidation of the highly unsaturated fatty acids will be intensified in the near future.

SMOKING FISH BY ELECTRICITY

A method of smoking fish by electricity is being successfully used in the Kiev Fish Combine of the U. S. S. R. The advantage is that the process is shortened by 8 to 10 times, and allows operations to be easily controlled. The electrical apparatus consists of a chamber over a smoke generator. Smoke formed by burning sawdust reaches a temperature of 60° C. (140° F.). In the smoking chambers, the smoke is heated by another electrical heater to a temperature of 80° to 100° C. (176° to 212° F.). The whole process is regulated by varying the density of the smoke and its temperature and by the strength of the current. This method, claimed to be the only possible one for mechanized, moving production lines, is reported to improve the taste of the fish (The Fishing News, July 26, 1957).

TRENDS AND DEVELOPMENTS

Alaska

GAME LAW REVISION INCLUDES PROTECTION OF WALRUS ON HIGH SEAS: The polar bear and the walrus, which until recently have been living in comparative safety on the edges of the Arctic ice pack, will have protection on the high seas should the Congress accept the revisions of the Alaska Game Law recommended by Secretary of the Interior Fred A. Seaton. The Department, through authority already granted by the Congress (S. 4115), can control the taking of these animals in Alaska and in the adjacent Territorial waters.

A new hunting technique has been developed--spotting polar bears afloat on ice floes from airplanes and then following up with a motor boat and rifle to effect the kill. This has been taking an increasing toll of the bear on the high seas where authority to regulate such hunting is entirely lacking.

Modern transportation, modern guns, and a market for polar bear skins and walrus ivory are taking both of these animals out of their historic role of subsistence items for the Eskimo and in many instances are making them articles of commerce.

Because of the seriousness of the situation, Secretary Seaton has already asked that more biological data be acquired and better population estimates of these animals be made to assure keeping the harvest within limits.

The Secretary is also asking that more authority be given to the Alaska Game Commission.

Many of the provisions of the bill to revise the Alaska Game Law were worked out jointly by the Alaska Game Commission and the Department. The new legislation would cover game and fur mammals, game and nongame birds, and game fishes.

At the present time the responsibility for prescribing regulations governing the harvest, management, and protection of Alaska's fish and wildlife resources rests with the Secretary of the Interior, with the Alaska Game Commission acting in an advisory capacity. Under Secretary Seaton's proposal the responsibility for prescribing such regulations would rest with the Alaska Game Commission, with the approval of the regulations by the Secretary. This proposal to place the entire rule-making function with the Commission is in keeping with the practice followed by most States.

The future of the polar bear and the walrus is of primary concern. There is no existing law under which the Department of Interior or the Territory of Alaska can restrict the taking of polar bears and walruses on the high seas. Unrestricted hunting of these animals on the high seas has increased at an alarming rate in recent years. The proposed amendments, applicable to American nationals, would provide for protection of these animals on the high seas subject to the provisions of existing law which allows natives to take walruses for subsistence purposes.

Other changes would eliminate many inflexible provisions from present legislation and permit the Commission to adopt or change management practices to meet changing situations. The Commission would also have the right to prescribe regulations, subject to approval by the Secretary, on reasonable fees for licenses, tags, or permits.

Walrus

The existing authority of the Commission requiring nonresidents to employ guides would be changed to permit the adoption of regulations, in the interest of public safety, to require that all persons hire guides when engaged in hunting or photographing specified species of game or marine animals in specified areas. The Commission would also be given more authority in regard to the qualifications of guides and the conduct of guiding activities. Provision is also made for mandatory revocation of a guide license for a period of from one to five years when a guide is found guilty of violation of the game law or the regulations.

When Alaska becomes a state, responsibility for prescribing and enforcing regulations applicable to the taking of marine mammals on the high seas by persons subject to the jurisdiction of the United States will remain with the Secretary of the Interior.

* * * * *

WILDLIFE REFUGE CREATED TO PROTECT SEA OTTER: Creation of the Simeonof National Wildlife Refuge in Alaska for the preservation and propogation of the sea otter was announced today by Secretary of the Interior Fred A. Seaton.

The new refuge contains approximately 10,442 acres. It includes all of Simeonof Island and the island's tidelands together with all adjacent water areas extending one mile beyond mean low water. Simeonof, one of the Shumagin group off the southeasterly coast of the Alaska Peninsula, is approximately 250 miles southwest of Kodiak Island.

Sea Otter

Assistant Secretary of the Interior Ross Leffler said Simeonof Island's luxuriant kelp growth provides an ideal habitat for the otters. The population of the herd is estimated at approximately 500. Otter herds live on other islands.

The species is slowly increasing because it has received vigilant protection since the Alaska Game Commission discovered a few otters surviving in an Aleutian bay, Assistant Secretary Leffler said.

Man is the otter's only serious enemy. From time immemorial Eskimos and Aleuts had hunted otters, but in moderation and with little harm to the vast herds. But in 1741 a shipwrecked crew of sailors returned to Russia with 700 sea otter furs and a ruthless hunt began for the silky, valuable fur. Aleuts were hired to spear the prey. Scores of otter ships put out from ports as distant as Boston and Mexico. So tremendous was the slaughter that by 1840 sea otters were at the brink of extinction.

Simeonof Island is well adapted to livestock production. The order creating the wildlife refuge permits grazing to continue, but only one grazing permit will be permitted at any one time. Violation of game regulations or undue interference with the otter herd by the grazing lessee, his agents or employees, will constitute valid reason for cancellation of the lease.

Establishment of the refuge will also give increased protection to other wildlife in the area, including tufted and horned puffins, glaucaus-winged gulls, murres, cormorants, fulmars, kittiwakes, insectivorous birds, eider and harlequin ducks, arctic terns, and sea lions.

California

ANCHOVY CONCENTRATION REPORTED OFF COAST: An apparent "explosion" in the anchovy population off the California coast from Pt. Arena to Pt. Conception was reported the week of June 15, 1958, by the California Department of Fish and Game.

The Department said the population is made up of anchovies from last year's spawning and some from this year's, and is the greatest since 1952. The anchovies are too small to be of commercially-catchable size, but they are already food at least for salmon. The Department said good salmon catches are being made adjacent to anchovy schools.

The abundance of anchovies follows five consecutive lean years in which very few anchovies were found north of Pt. Conception. This year massive schools were spotted throughout the central California area. Largest numbers, noted by the Department's aerial spotting runs and checks with fishermen, were located off Pt. Reyes where some 5,000 schools were seen. The Department estimates the size of the population to average about 20 tons a school. Some 300 to 400 schools were spotted near San Francisco off Fleischacker's and an equally large number in Morro Bay.

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COMMERCIAL FISHERIES LANDINGS DECLINE IN 1957: Commercial landings and shipments of fish and shellfish into California totaled 737.8 million pounds in 1957, a drop of about 35 million pounds as compared with the 1956 total of 771.7 million pounds. During 1955, 710.2 million pounds were landed or shipped into the State, according to figures released by the California Department of Fish and Game. The record was set in 1936 at 1.7 billion pounds, most of it sardines (1.5 billion pounds). A drop of 23.7 million pounds in the sardine catch and 13.7 million pounds in tuna landings were major contributors to the decline in 1957. A major decline of 6 million pounds of salmon from the 1956 figure was offset by an increase of 5 million pounds of crabs and oysters and slight increases in other catches.

In terms of landed weight, the Eureka region climbed from 5th to 4th place, moving ahead of the Monterey region. Other port regions held the same position in 1957 as the previous year.

Los Angeles was the leading port with 334.5 million pounds of fish landed. Other regions, by pounds landed, were: San Diego, 121.2 million; Santa Barbara, 73.1 million; Eureka, 47.6 million; Monterey, 27.1 million; San Francisco, 22.4 million; and Sacramento, 1.3 million pounds.

Total landings and shipments consisted of 627.2 million pounds landed by the California fishing fleet and 110.6 million pounds brought into the State by common carrier and not caught by the California fishing fleet.

Of the fish landed by the fishing fleet, more than half were caught in California waters. Landings from waters north of the state boundary accounted for 1.5 million pounds. Landings of fish caught below the international boundary amounted to 259.5 million pounds. Most of this catch was (257.7 million pounds) made up of five species of tuna.

In weight, yellowfin tuna was the leading species caught in 1957 by California's commercial fishermen, who landed 136.9 million pounds of this species in 1957. Jack mackerel led the list of landings from California waters with 82.0 million pounds.

Other leading commercial species, in pounds, landed from California waters in 1957 were: Pacific mackerel, 62.0 million; sardines, 45.8 million; anchovies, 40.5 million; albacore, 22.6 million; crab, 19.0 million; rockfish, 15.7 million; squid, 12.4 million; giant Pacific oyster, 11.1 million; bluefin tuna, 10.5 million; Dover sole, 6.9 million; salmon, 5.6 million; and abalone, 5.4 million. Individual catches of other species were less than 5 million pounds in each case.

* * * * *

KELP STUDY: Even underwater plant life, such as kelp, can be "sunburned." Perhaps kelp in the future can be grown in special large tanks, then transplanted while still young to now-barren oceanic areas.

Fascinating facts and possibilities such as these are beginning to emerge from a five-year study being conducted under contract for the California Department of Fish and Game by scientists of the Scripps Institution of Oceanography at La Jolla. They've thrown quite a task force into getting the facts on the giant kelp of the California coast, known scientifically as Macrocystis.

They have a rather large order confronting them, for there's been a long-standing controversy over whether commercial kelp cutting on a regular harvest basis does any damage to the extensive sport fishery which itself has become big business in Southern California.

It's well known, of course, that fishes and other forms of marine life take a fancy to kelp beds as a good place to find food and shelter. It's also a fact that kelp is a valuable product as fertilizer, as a food additive, for its chemicals, and in many other important ways too numerous to list.

Although there have been previous limited studies on the same subject, none was thorough enough or objective enough to satisfy the avid anglers who see in kelp cutting a threat to their favorite sport.

Helping to shape and guide the kelp research program is a committee representing a broad variety of interests and groups. Plans call for the Institution's scientific team to report regularly on progress being made to the committee, which will be responsible for informing the public and the Legislature as to results being obtained.

The program now is in its second year. Early stages of the study are devoted mainly to gathering basic information about kelp and its environment.

Four main lines of research are being pursued. These include the relationship between kelp and fish life, plant physiology, the reproductive cycle and growth rates, and environmental conditions. As many as 10 men--staff members, graduate students, and other specialists--are engaged in various phases of the study.

Most of the kelp scientists spend much of their time underwater, using self-contained underwater breathing apparatus (SCUBA) to attack the problem at close range. The work also entails cruises to sections of Southern and Baja California coastal waters to study kelp beds untouched by man so that information may be obtained for comparison with the harvested beds.

One of the interesting things being discovered about the complex and little known life of the kelp plant is that it can be successfully made to reproduce in the laboratory. This leads to the cautious hope that eventually it can be grown in quantity in special tanks ashore, then transplanted to oceanic areas now lacking in desirable plant life--which, in turn, probably would attract more fishes and thus provide better fishing in readily accessible spots along the coast.

It has been found also that kelp can be seriously damaged by "sunburn" and that the plant's ability to grow is restricted by too large doses of light and too high water temperatures. Near the ocean bottom where light is dimmer and temperatures cooler, kelp seems to grow better, which helps to explain why the heaviest beds often are located in colder water.

Effects of almost daily cutting on thickness of a kelp bed are being studied at Paradise Cove near Malibu. Here a pier, popular with fishermen, is located behind a large kelp bed. The comings and goings of many small craft keep a channel open through the bed, since the propellers continually chop off the tops of the plants.

The studies reveal that the kelp bed thickness below the surface in such constantly cut areas is only one-half to one-third as great as in the surrounding uncut areas. As might be expected, there are far fewer adult stems than usual but many more young plants in continuously cut areas.

On the other hand, comparisons between thicknesses of kelp in commercially-harvested beds (usually two to four times a year) and unharvested beds reveal no consistent differences so far.

Of great interest to the kelp investigators is the result of a shipwreck last year on a rocky point in Baja California. A loaded tanker went aground there and the resulting oil spill killed many marine organisms which graze on kelp, yet the oil did not do much damage to the kelp itself. This has given the scientists a unique opportunity to study a bed free from most of the natural depredation.

In addition to these studies being pursued at La Jolla, personnel of the Department of Fish and Game have photographed the entire Southern California and Channel Island coastline from the air and are preparing charts showing where the kelp beds are located. Another department worker is reviewing the history of kelp harvesting to tie in with other phases of the over-all study.

The Institution's researchers emphasize, however, that kelp beds vary from place to place and season to season, and the plant itself is a complex organism, so that it won't be easy to draw any firm conclusions. (Outdoor California, June 1958, of the California Department of Fish and Game.)

* * * * *

SPAWNING SARDINE BEHAVIOR OBSERVED BY AERIAL SCOUTING (Airplane Spotting Flight 58-2A): Coastal waters from Point Arguello south to the U. S.-Mexican boundary and offshore around the Northern Channel Islands, Santa Catalina Island, Los Coronados Islands were scouted from the air on March 18-19 to observe the behavior of spawning sardines. The scouting was conducted by the California Department of Fish and Game with their Beechcraft plane.

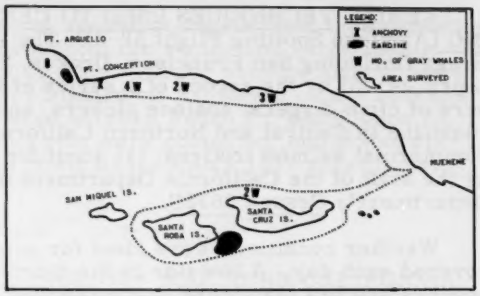


Fig. 1 - Airplane Spotting Flight 58-2A.

In general, atmospheric conditions suitable for aerial observing were fair to good, with morning fog and smog the major deterrents. The Los Angeles basin was particularly bad, affecting adjacent areas as far offshore as Santa Catalina Island, south to Dana Point, and northwestward to Santa Barbara. Figures 1 and 2 depict the areas covered by the survey and the locations of sightings of the various animal species.

Three of the 13 groups of fish schools sighted were identified as sardines and five as anchovies, while four were composed of large fish, probably yellowtail. One group was too deep for identification but appeared to be either sardines or jack mackerel.

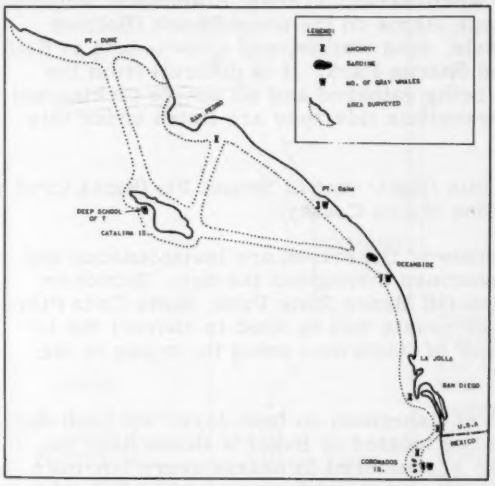


Fig. 2 - Airplane Spotting Flight 58-2A

Small groups of California gray whales, 25 in all, were sighted throughout the surveyed area; several were young of the year and all were moving northward.

Scattered groups of porpoise and seals were also seen; however, positive identifications were not made.

The sighting of sardine schools about the Channel Islands was of particular interest because the presence of sardine eggs in plankton tows, made from the research vessel N. B. Scofield just previous to the flight, indicated that sardines were actively spawning in the area. It would appear that during spawning the fish school near the surface of the water for a portion of the day. This behavior does not differ significantly from that observed at other times of the year.

The sardine school groups were relatively small and distinct but widely separated. A school group sighted close to shore just north of Point Conception was composed of 4 to 6 small schools. The largest group observed was estimated to contain 15 to 20 schools. These were seen in the channel between Santa Rosa and Santa Cruz Islands. Four schools in the area off Oceanside were all relatively small.

The anchovy schools and school groups were also very small with not more than two schools per group. Three of the five groups were found in the San Diego

area while the other two were at widely separated localities: Horseshoe Kelp south of Point Firmin and south of Point Conception.

* * * * *

AERIAL TECHNIQUES USED TO CENSUS COMMERCIAL AND SPORT FISHING (Airplane Spotting Flight 58-3): The inshore area between Monterey and Fort Bragg (including San Francisco, Drakes, Tomales and Bodega Bays) was surveyed (April 24-25) by the second of a series of flights designed to: (1) assess the numbers of clam diggers, abalone pickers, and hook-and-line fishermen utilizing the coastline in Central and Northern California; (2) record the number and location of commercial salmon trollers; (3) scout for pelagic fish schools. The flight was made by the staff of the California Department of Fish and Game on April 24-25 in that Department's Cessna 3632C.

Weather conditions were ideal for scouting and the entire area surveyed was covered each day. A low tide in the morning attracted Pismo clammers to the beaches and bay clammers to the lagoons, but the tide was not low enough to attract many abalone pickers. The tide was -0.3 feet on the 24th and -0.2 feet on the 25th. Northwest winds up to 14 knots developed in mid-afternoon on each day.

Clamming Census: Compared to the large numbers of clammers (909 tallied on Sunday, March 2, 1958), relatively few clammers (182) were tallied over the same section of the coast on this flight on April 24-25. "Other" clammers include all persons digging for cockles and littleneck clams on the ocean beach (Bolinas Bay) and for fish bait which includes mussels, sand worms, and crustaceans at Half Moon Bay, Scott Creek, Pescadero Pt., and Sharps Park. It is difficult from the air to determine exactly what species are being gathered and all people picking and digging in and around the rocks in the intermediate tide zone are listed under this "other" category.

Two abalone pickers were sighted on this flight--one at Soquel Pt. (Santa Cruz County), and the other off Waddell Creek (San Mateo County).

Hook-and-Line Fishermen: Aerial counts of fishermen are instantaneous and do not take into account the turnover of fishermen throughout the day. Turnover counts were made at the Cement Ship at Seacliff Beach State Park, Santa Cruz Pier, Baker's Beach, and Berkeley Pier and these counts will be used to convert the instantaneous aerial tally into the total number of fishermen using the ocean in the area surveyed on these two days.

There was a very similar distribution of fishermen on both days. On each day nearly a third of all the shore fishermen were located at Baker's Beach near the Golden Gate Bridge. Shore fishermen were encountered in nearly every ten-mile section of the coast but were not present in any great numbers except at Baker's Beach. A tally in each ten-mile section surveyed from Monterey to Bodega Bay revealed that on both days there were 188 surf fishermen and 55 rock fishermen.

Counts of pier fishermen were made early in the morning in the Monterey Bay area and the numbers of fishermen cannot be compared directly to the numbers tallied on the piers in the San Francisco Bay region which were made later in the day. The peak of abundance of anglers on piers occurs sometime between 10 a. m. and 2 p. m. so direct counts of pier fishermen cannot be compared. Again turnover curves are necessary to convert instantaneous counts into totals which can be compared.

Commercial Salmon Trollers: Commercial salmon fishing has been poor so far this season and consequently only a relatively small number of trollers were

sighted. On the 24th a total of 28 commercial salmon trollers were sighted; 9 off Monterey, 8 in the area between San Francisco and Bodega, and 12 off Fort Bragg. On the 25th a total of 34 were sighted; 20 in Monterey Bay and 14 in the San Francisco to Bodega area. The area to the north of Bodega Bay was not covered on the 25th.

Pelagic Fish: Anchovies are beginning to appear at the surface, thus repeating the seasonal behavior of "disappearing" throughout the winter and early spring months and reappearing sometime in April or June. All the schools sighted were very small surface schools. One school was sighted off Pt. Reyes on the 24th and about a dozen schools were sighted in the area between Pedro Pt. and Pigeon Pt. on the 25th. Fishermen working out of Princeton were contacted, and it was disclosed that these small schools were made of small (probably 1957 year-class) anchovies.

* * * * *

SARDINE DISTRIBUTION AND ABUNDANCE OFF SOUTHERN CALIFORNIA SURVEYED FROM AIR (Airplane Spotting Flight 58-2B): To determine the coastal distribution and approximate abundance of sardines and other pelagic fishes off the coast of southern California was the principal purpose of an airplane spotting flight made by the California Department of Fish and Game with their Beechcraft plane April 17-19. A secondary objective was to locate and count abalone boats working in the area surveyed. The inshore area from the beach to four miles offshore from Long Beach to the U. S.-Mexican Border was surveyed on April 17. The area 8 to 10 miles offshore from Laguna Beach to Oceanside, from Oceanside to Santa Catalina Island and the area around Santa Catalina Island was surveyed on April 18. The inshore area from Malibu to Point Mugu and the area around the islands of Santa Cruz and Santa Rosa was surveyed on April 19.

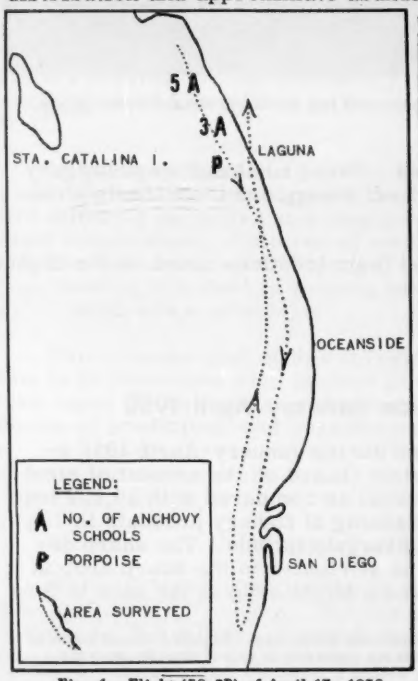


Fig. 1 - Flight (58-2B) of April 17, 1958.

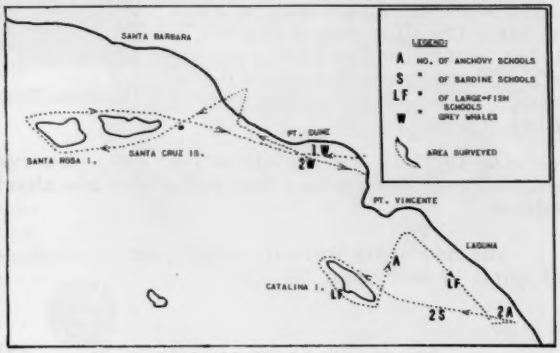
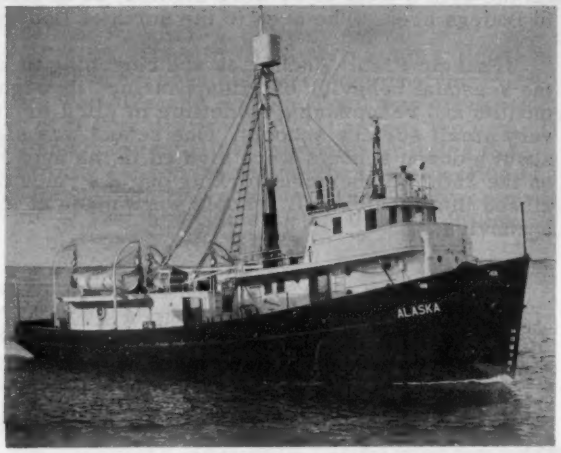


Fig. 2 - Flight (58-2B) of April 18-19, 1958.

Fog and overcast hampered work during the first two days, April 17 and 18, and permitted only limited flying with poor visibility.

On April 17, 5 schools of anchovies were observed off Huntington Beach and 3 schools of anchovies were seen in the area around the Newport sewer outfall. A small school of porpoise was noted 1 mile SE. of the Newport beach jetty. Water conditions near shore were muddy but green to dark blue farther offshore.

On April 18, the offshore area was scouted to determine if scattered fish and numerous small spots of sardines, observed from the Department of Fish and Game research vessel Alaska, would be visible from the air. In general, they were not--only 2 small schools of anchovies were seen in the area which had been scouted by the vessel. However, 2 schools of anchovies were observed near shore off Oceanside, and, in addition, one school of large fish was seen 8-10 miles off Laguna Beach. The live bait operator at Oceanside had reported many schools of anchovies and sardines in 120 feet of water with the fish appearing at a depth of 90 feet; these fish were not observed from the air. A school of large fish (possibly white sea bass) was located at Santa Catalina Island and one large unidentified school (possibly anchovies) was seen in the channel between the island and Long Beach.



California Department of Fish and Game research vessel Alaska.

On April 19, no schools of fish were observed. Three adult and two young grey whales were seen near Point Dume and one shark off Smugglers Cove, Santa Cruz Island.

Abalone boats were observed and counted and their locations noted on the flights of April 17 and April 19.

Cans--Shipments for Fishery Products January-April 1958

Total shipments of metal cans during January-April 1958 amounted to 29,239 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 50,652 tons in the same period a year ago. Canning of fishery products in January-April this year was confined largely to tuna. The sharp decline in shipments of metal cans is attributed to the sharp drop in the canning of mackerel, anchovies, and shrimp and a slight drop in the pack of tuna due to lighter supplies of raw material.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

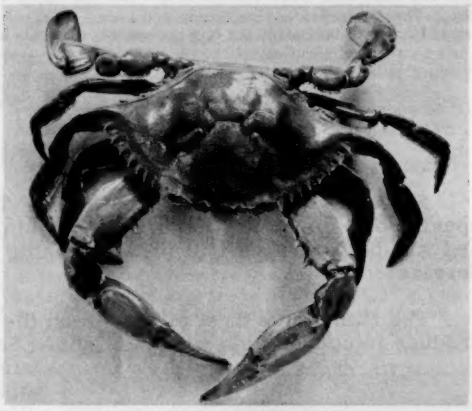
Container to Reduce Handling of Refrigerated Foods

A new perishable food container which its backers hope will substantially reduce the cost of transporting perishable foods is reported to be under development by a truck line, a railroad, and a supplier of railroad equipment, according to Quick Sheet (National Association of Refrigerated Warehouses).

The plan calls for the use of refrigerated containers of a size which could be handled from a piggy-back trailer directly into a supermarket's walk-in refrigerator without having to be handled during transit. Each container would have its own refrigerating unit so that the piggy-back trailer could accommodate mixed loads of commodities requiring different temperatures. Project engineers believe that use of such a container would reduce from six to one the number of handlings now required.

Crabs

INVESTIGATION OF BLUE-CRAB ABUNDANCE AND CATCH FLUCTUATIONS: An investigation to determine the causes of fluctuations in the abundance and catch of blue crab in the Chesapeake Bay area has been initiated by the U. S. Bureau of Commercial Fisheries by awarding a contract to the Oyster Institute of North America to conduct the study. Financed by funds provided by the Saltonstall-Kennedy Act, the researchers hired by the Institute will utilize laboratory facilities provided by the Bureau's Fishery Biological Laboratory at Beaufort, N. C.



Blue Crab

Laboratory facilities provide sea water at five different temperatures or five different salinities at a single constant temperature. Cultures of marine plankton and a number of "sponge" crabs (egg-bearing females) in running seawater tanks are available.

The ultimate goal of this investigation is to determine what factors in nature cause the rather large fluctuations in the year broods of crabs, and to find means of predicting, and possibly controlling, the fluctuations in abundance.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MAY 1958: Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 2.1 million pounds (value $1.2 million) of fresh and frozen fishery products were purchased in May 1958 by the Military Subsistence Market Centers. This was lower than the quantity purchased in April by 8.0 percent and 22.0 percent less than the amount purchased in the same month a year ago. The value of the purchases this May was lower by 3.2 percent as compared with the previous month, and down 9.6 percent from May a year ago.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Market Centers, May 1958 with Comparisons

QUANTITY				VALUE			
May		Jan.-May		May		Jan.-May	
1958	1957	1958	1957	1958	1957	1958	1957
(1,000 Lbs.)				($1,000)			
2,054	2,635	9,310	10,002	1,152	1,274	5,294	5,106

For the first five months of 1958 purchases totaled 9.3 million pounds, valued at $5.3 million--a decrease of 6.9 percent in quantity, but an increase of 3.7 percent in value as compared with the same period of 1957.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Market Centers, May 1958 with Comparisons

Species	QUANTITY		VALUE	
	May	Jan.-May	May	Jan.-May
	. .(1,000 Lbs.). .		. .($1,000). .	
Tuna	315	1,270	158	640
Salmon . . .	-	1,372	-	724
Sardine . . .	-	33	-	12

Prices paid for fresh and frozen fishery products by the Department of Defense in May 1958 averaged 56.1 cents a pound, 1.0 cent less than the 57.1 cents paid in April, but were 7.8 cents higher than the 48.3 cents paid during May a year ago.

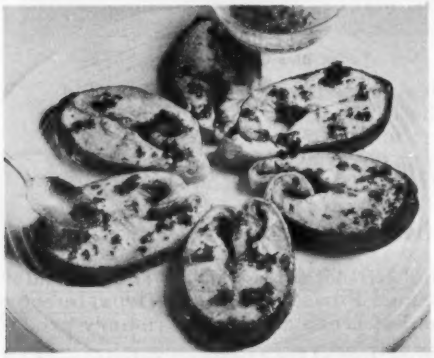
Canned Fishery Products: Tuna was the only canned fishery product purchased for the use of the Armed Forces during May 1958. Prices paid for canned tuna increased from 44.2 cents a pound in May 1957 to 50.2 cents a pound in May 1958.

Note: The Armed Forces installations make some local purchases not included in the data given. Actual total purchases are higher than indicated, but it is not possible to obtain local purchases.

Films

FILMING TO START ON FIRST OF TWO SALMON FILMS: All commercial species of salmon, all methods of catching them, and the way in which they are canned will be portrayed in a film now being produced by the U. S. Fish and Wildlife Service.

The film is the first of two which the Bureau of Commercial Fisheries will produce in cooperation with the Canned Salmon Institute of the Association of Pacific Fisheries. A salmon recipe booklet in full color, which will be distributed with the films, is also under preparation. Both of the films and the recipe booklet are being completely financed by the Association of Pacific Fisheries. Production is under the direction of the technical film expert for the Bureau. The filming is to be done under contract by MPO Productions of New York City.



Sequences will be filmed of the 1958 salmon run in the Columbia River, Puget Sound, and in the Alaska fisheries. Other sequences will show activities in the processing plants with additional footage on cooking and serving.

In the second film the emphasis will be on purchasing, cooking, and serving with some sequences on catching and processing. Contract for this work will be awarded shortly.

Each film will run 14 minutes. Each will be 16 mm. in sound and color. The films, which will not be ready for distribution for several months, will be available free of charge through the Bureau's film distribution system. When the recipe booklet is available, which will be concurrent with the release of the films, copies may be secured through the Government Printing Office at a nominal cost.

Great Lakes Fishery Investigations

WESTERN LAKE ERIE SURVEY CONTINUED (M/V Cisco Cruise 5): Trawling operations were conducted in 12 areas in western Lake Erie by the U. S. Bureau of Commercial Fisheries research vessel Cisco during Cruise 5 between June 17-30, 1958. Ten of these areas include stations scheduled for visits every cruise. As during previous cruises, this year yellow perch and smelt made up the bulk of most of the catches. Smelt, except for fry, were not common in catches in extreme western Lake Erie, suggesting the beginning of a general easterly movement of the species. Sheepshead, emerald shiners, spottail shiners, and trout-perch were the only other species regularly caught in large numbers. About 2,700 emerald shiners were taken in one 10-minute tow, but the catch of this species was usually much smaller. Many of the mature sheepshead appeared ripe, but none had spawned. Trout-perch have begun spawning and emerald shiners and spottail shiners are nearing that stage. Other species taken include walleye or yellow pike (very few), silver chub, white sucker, carp, white bass, channel catfish, burbot, white crappie, smallmouth bass, and gizzard shad. The latter species, as well as the alewife, continues to be rare in the catches.

An experimental nylon gill net (mesh sizes 1-, $1\frac{1}{2}$ -, 2-, $2\frac{1}{2}$ -, 3-, and 4-inch) was set in 4 fathoms off Sandusky. The net was "canned up" so that its float line was 6 feet below the surface. The catch was almost entirely 2-year-old yellow perch except for several smelt which were taken in the smallest mesh.

The examination of large numbers of stomachs of several species of fish taken from Lake Erie this year has begun and is progressing satisfactorily. The analyses are being made by the Ohio State University at its Stone Laboratory at Put-in-Bay, Ohio.

In an attempt to gain information regarding vertical movements of fish, gill nets were set obliquely from top to bottom for two-hour periods from mid-afternoon until midnight. Practically no fish were caught until the last set, indicating that there was little movement into midlevels until well after dark.

Fish fry were collected with large-mesh plankton nets which were either towed alongside the boat or attached to the headropes of the trawls, and by use of a "sled" trawl fitted with a bobbinet liner in its cod end and designed to operate on rough bottom. Some of the very small fry are as yet unidentified, but the larger were mostly smelt and yellow perch. Some unidentified pelagic eggs were also taken. Considerable difficulty was encountered with the plankton nets becoming heavily laden with zooplankton, principally Daphnia retrocurva. In spite of the great abundance of crustacean plankton, the water in western Lake Erie was comparatively clear, apparently due to a general scarcity of phytoplankton, especially filamentous diatoms.

Owing to the cool weather which prevailed, water temperatures during Cruise 5 did not increase as much as would be expected at this time of the year. Surface temperatures in the western basin ranged mostly from 18.5° C. (64.3° F.) to 20.0° C. (68.0° F.) but temperatures as low as 16.6° C. (61.8° F.) were recorded off Lorain, Ohio, in the central basin. Thermal stratification was observed in the central basin with the metalimnion just off the bottom in 10 fathoms of water.

Note: See Commercial Fisheries Review, July 1958, for scientific names of species mentioned in this article.

Gulf Exploratory Fishery Program

EXPLORATORY AND COMMERCIAL-SCALE FISHING FOR ROYAL-RED SHRIMP OFF FLORIDA EAST COAST (M/V Silver Bay Cruise 9): During June 1958, the U. S. Bureau of Commercial Fisheries chartered fishing vessel M/V Silver Bay made a shrimp trawling survey off the east coast of Florida. The cruise was divided into two parts: exploratory fishing and royal-red shrimp (Hymenopenaeus robustus) fishing on a commercial scale. The exploratory trawling included 24 drags in depth varying from 25-590 fathoms, 13 of the 24 drags were made in depths greater than 300 fathoms. Although the data gained from this phase of the cruise greatly supplemented existing knowledge of offshore conditions, no significant concentrations of commercially-valuable species were found.

The second phase of the cruise was devoted primarily to simulated production-type fishing for royal-red shrimp. Utilizing a full week of around-the-clock fishing effort, 34 drags were made.

Two types of gear were employed during this part of the cruise; a 65-foot balloon net fished on a bridle with a single warp, and an 85-foot balloon trawl fished with two warps. Bracket-type doors were used with both rigs; $5\frac{1}{2}$-foot doors in combination with the 65 foot net, and 8 foot doors with the 85-foot balloon trawl. Twelve successful tows, with the 65-foot trawl, yielded about 195 pounds of royal-red shrimp (heads-on) per 3-hour drag, 8 drags with the 85-foot balloon trawl averaged 225 pounds of red shrimp per 3-hour tow. Best fishing was found in depths

between 180-200 fathoms off St. Augustine, Fla. After 7 days of operation, 2,143 pounds (heads-off) of 20-30 count royal-red shrimp were caught. Current fluctuations and resulting gear fouling caused considerable loss of fishing time during the 7-day period.

Of special interest was the capture of a giant squid on June 11. The damaged specimen, which was estimated to be 43 feet in length, was found floating on the surface of the Gulf Stream off Cape Canaveral. It has been turned over to the Marine Laboratory, University of Miami, for study.

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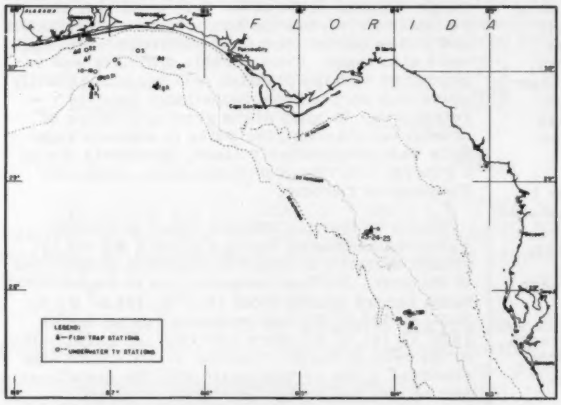
PRELIMINARY EXPERIMENTS TO CATCH RED SNAPPERS WITH BOTTOM TRAPS UNSUCCESSFUL (M/V George M. Bowers Cruise 12): Only 50 pounds of red snappers were caught in 87 trap sets (2 hours to 8 days duration) made in the upper Gulf of Mexico offshore from Mobile, Ala., and Tampa, Fla., by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel George M. Bowers. Tests between January 6 and June 6, 1958, were conducted to determine the feasibility of using traps for the commercial capture of red snappers. Most of the effort was concentrated in the Pensacola area.



M/V George M. Bowers Cruise 12 (Jan. 14-June 6, 1958)

Fish traps of several designs, principally arrowhead, "L" shaped, and rectangular, were used during the cruise. Red snapper were caught in 8 of the 87 sets. The largest catch of red snappers was made during a two-hour set when 8 snappers ($1\frac{1}{4}$-$2\frac{1}{4}$ pounds) were caught. The traps also caught groupers and scrap fish but not in commercial quantities. The largest catch by hand lines made at any location was about 1,700 pounds of red snappers and 600 pounds of groupers during a two-day period.

In addition, an underwater television unit was mounted on fish traps of various designs, and 25 tests of this gear were made. The time of these sets ranged from 5 minutes to over 14 hours. Observations of the TV monitor screen were made and 3,400 feet of film was taken off the screen. This film shows snappers, groupers, triggerfish, and other species around, entering, and some leaving the traps. The observations of the reactions of fish to the traps indicated that modification of the trap entrance tunnel might be desirable. After modifications were made, fish entered the trap more readily. The largest catch, however, during this series of 25 sets was about 55 pounds of groupers and 10 pounds of red snapper during one 30-minute set of a modified trap.

During the January-March period, operations were greatly hampered because of weather conditions in the upper Gulf. Time was also lost from this cruise during April when the vessel was in drydock.

Films of the TV screen made in this period are presently being studied and edited for future showing.

Lobsters

CANNED CATFOOD USED AS SPINY LOBSTER BAIT: In Key West, Fla., spiny lobster fishermen have turned from the fish heads and noncommercial or trash fish normally used for bait in lobster pots to canned cat food (made with a fish base). Two holes are punched in an 8-oz. can which is wired into the pot. The canned bait is as effective as the previously used waste fish and lasts, even in warm tropical waters, up to a week. It has the additional advantage that, unlike the customary bait, the trapped spiny lobster cannot consume it.

Maine Sardines

SEASON OFF TO SLOW START: The Maine sardine canning season was off to a slow start with production as of the week ending June 6 only about 1 percent of the total for the same date last year. Several plants working sporadically had packed a total of about 3,000 cases as compared with 271,000 cases of canned Maine sardines in the same period of 1957, a June 11 news release from the Maine Sardine Council points out.

About 33 plants were ready to operate, but the fish supply had been so limited that it was impossible to start full-scale production on an efficient basis. The industry expected increased operations would begin soon since conditions seemed to be ideal for the usual June run of fish.

The 3,000 cases processed was the smallest pack as of the first week in June for 20 years and minute in comparison with 1954 when the industry had produced 501,000 cases. Packs for similar periods in other years were as follows: 1951--87,000; 1952--297,000; 1953--207,000; 1955--44,000; and 1956--95,000 cases.

The industry is again faced with higher operating costs, for the sixth year in a row, due to increases in the price of cans and other items.

* * * * *

CANNED STOCKS JUNE 1, 1958: Distributors' stocks of Maine sardines totaled 237,000 actual cases on June 1, 1958--7,000 cases or 3 percent more than the 230,000 cases on hand June 1, 1957. Stocks held by distributors on April 1, 1958, amounted to 293,000 cases, and on January 1, 1958 totaled 230,000 cases, according to estimates made by the U. S. Bureau of the Census.

Table 1 - Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, June 1, 1958, with Comparisons

Type	Unit	1957/58 Season				1956/57 Season			
		6/1/58	4/1/58	1/1/58	11/1/57	7/1/57	6/1/67	4/1/57	1/1/57
Distributors	1,000 Actual Cases	237	293	230	298	212	230	295	347
Canners	1,000 Std. Cases 1/	235	476	1,111	1,337	895	416	465	879

1/ 100 $3\frac{3}{4}$-oz. cans equal one standard case.

Canners' stocks on June 1, 1958, totaled 235,000 standard cases (100 $3\frac{3}{4}$-oz. cans), a decrease of 181,000 cases (44 percent) as compared with June 1, 1957, and a decrease of 78.2 percent (876,000 cases) from the 1,111,000 cases on hand January 1, 1958. The total supply for the 1957 season (April 15-December 1) was close to 2,543,000 standard cases. This amount includes a pack of 2,117,000 cases plus

a carryover of 426,000 from the 1956 season. The pack of Maine sardines from April 15, 1958 to June 1, 1958 was only 1,500 cases.

The packing season opened on April 15, 1958, but the pack was very light during the first two months of the season. Catches improved early in June and as a result the canners' stocks began to improve, but the pack was still only half of that in 1957. As of June 28, only 302,000 standard cases had been packed this season as compared to 672,000 cases as of the same date last year. While there was a good run of fish in the area west of Boothbay Harbor, many were too large for canning purposes.

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SARDINE INDUSTRY INCREASES ADVERTISING EXPENDITURES: Accelerating its promotional activities, the Maine Sardine Council will spend $50,000 for publicity and public relations during the fiscal year starting July 1, 1958. The Council's Executive Secretary said on June 25, that the budget for these items had been nearly doubled from the previous year and was in line with the Council's efforts to increase markets for and consumption of Maine sardines.

He said that the promotional activities would feature the industry's new mandatory grading and quality-control programs as well as recent research findings in the nutritional and health field which are favorable to sardines. The volume feeding and institutional markets will also be a key target for the first time.

A New York advertising agency is retained by the Council to handle the promotions in cooperation with its Augusta offices.

Maryland

PROGRESS REPORT ON CAUSES OF RED DISCOLORATION IN OYSTERS AND SOFT CLAMS: Commercial shellfish packers occasionally experience a red coloration in the pack of oysters (Crassostrea virginica) and/or soft clams (Mya arenaris). Usually the predisposition for color development is not evident at the time of shucking, making the problem even more serious for the packer. One known cause of red coloration is "pink yeast," which grows and develops in the pack, even under proper refrigeration. Apparently these Torulae are quite common, but can be controlled by proper plant sanitation and handling. Another type of red coloration, similar in some respects but differing in others, has been experienced by both oyster packers and soft clam packers. Under rather standardized conditions of oyster and clam packing houses, packs of shellfish during the cool and cold months sometimes develop a very definite, beet-juice or blood-red coloration after three to five days storage under refrigeration.

Oysters exhibiting this phenomenon in the Rappahannock River developed red coloration for periods of about 3 or 4 weeks only, and oysters from these bars were normal after this period. In soft clams in the Chesapeake Bay, in the vicinity of the Bay Bridge at Annapolis, red coloration was noted the first week in October 1957, persisted throughout the winter, finally clearing up in the spring. Soft clams in the Patuxent River, on the other hand, had only occasional brief occurrences of red coloration.

At the Maryland Chesapeake Biological Laboratory, these problems were attacked:

(1). Is color production due to the growth of living organisms in the pack after shucking?

(2). Is color production due to the conversion of non-red pigments in the clams?

(3). Is color production the release of a red pigment already in the clams?

(4). What part, or organ, in the clam releases the red pigment?

The development of red coloration is not due to the growth of living organisms, because color developed when the clams were placed in substances inimical or inhibitory to the growth of living organisms. In some cases, color developed faster in the treated clams than in the ones that were not treated. The causative pigment is apparently entirely held in the small brown "liver" or "digestive gland," the small, brownish organ in the clam located near the hinge. This was indicated by carefully dissecting some clams and storing the various parts in separate sterile containers. Only in the containers containing the "liver" did red coloration develop. As to the question of whether

the pigment is a conversion of a nonred pigment, or the simple release of red pigment from this gland, the evidence seems to indicate the red pigment is stored in this gland. When fresh glands from clams that would develop red coloration were streaked on a piece of porous paper, the red material diffused out with the liquid onto the surrounding paper and became visible. Extraction experiments further indicated this pigment is stored in the gland.

Several other pertinent facts were discovered in the course of these investigations.

(1). Heating at 50° C. (122° F.) for 15 minutes modifies or destroys this pigment, while heating at 40° C. (104° F.) for 30 minutes did not alter the pigmentation. However, the meats became grayish when heated to these temperatures.

(2). Soft clams held as shell stock for 10 days under refrigeration (4° C. or 39° F.) did not show noticeable red coloration when shucked, while shucked clams from the same lot developed red coloration in the pack.

(3). Bacteriological tests showed no red bacteria present.

(4). In some early experiments, red clam liquor from a commercial pack was inoculated into some "nonred" clams and some "nonred" oysters. Red coloration developed in the inoculated clams and oysters, while those left uninoculated did not develop red coloration. Later experiments, using freshly dug red clams, did not indicate transmissibility. These circumstances indicate pink yeast coloration may have occured along with the form of red coloration being studied.

Note: See Commercial Fisheries Review, March 1958 p. 25, January 1958 p. 37.

The Chesapeake Bay Institute, Johns Hopkins University, ran experiments to identify the red pigment. By using extraction and adsorbtion techniques with spectrophotometric analysis, the scientists were able to characterize the red coloration as a plant pigment, probably from microscopic water plants called phytoplankton. The red pigment is probably a carotenoid from these plants. They also found that the "liver" of a clam that will turn red shows a characteristic color under ultraviolet light, while a clam that has no red coloration does not show this fluorescence.

The U.S. Bureau of Commercial Fisheries also investigated several aspects of the red clam problem. Investigations of the phytoplankton in the Chesapeake Bay in the area where red coloration persisted were made throughout the winter. In addition, the Bureau's laboratories at Milford, Conn., and Beaufort, N. C., ran experiments to culture and identify phytoplankton from this area. The results of these studies are not yet available. (Maryland Tidewater News, May-June 1958.)

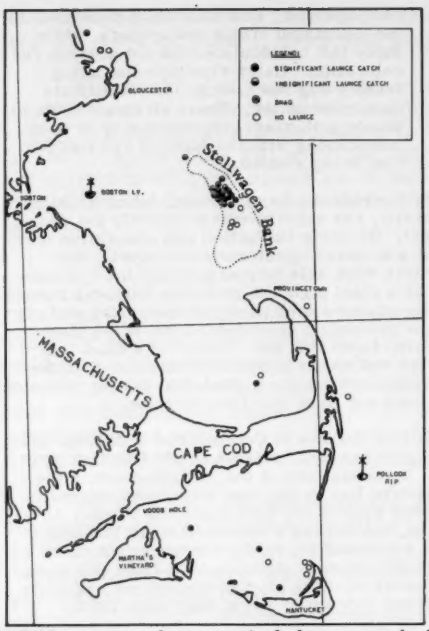
North Atlantic Fisheries Exploration and Gear Research

EXPLORATORY TRAWLING FOR COMMERCIAL QUANTITIES OF LAUNCE BY M/V "METACOMET:" The first in a series of cruises off the New England coast for the purpose of measuring commercial concentrations of launce or sand eels (Ammodytes sp.) was completed by the U. S. Bureau of Commercial Fisheries chartered fishing vessel Metacomet on June 17, 1958.

Service's chartered vessel M/V Metacomet.

These surveys were initiated due to the fact that a considerable fishery for launce has been developed in Europe. The same or closely related species of Ammodytes has been observed off the Massachusetts coast and in other areas. They are also frequently found in cod stomachs. If concentrations of the sand launce were available, a fishery of value for the reduction plants could be established. This year 400 Danish, 100 West German, and a few Norwegian vessels are participating in the European fishery. Since the launce fishery began off the Danish coast, 148,604 metric tons have been landed.

Trawling operations off New England were conducted from the M/V Metacomet using the same type trawl used in Holland in the launce fishery. This trawl has several sizes of mesh from 4½ inches in the wings and leading body section, down to six-millimeter (approx. ¼ inch) meshes in the extension--cod-end piece. The head and sweep ropes measure 100 feet each.



M/V Metacomet exploratory cruise for launce or sand eels in June 1958.

Though commercial concentrations were found to be present in most areas, important commercial catches were made in only one. Other areas gave indications, through traces on the fishscope, that substantial quantities of launce may be available, though none were taken.

The most important catch was approximately five tons of launce caught in four 30-minute tows on Stellwagen Bank off Gloucester, Mass., during daylight hours. Other tows caught substantial quantities of several species, such as haddock, cod, whiting, flounder, scup, squid, and dogfish.

Tests on the diurnal effects, using the fishscope, showed that the launce rose to surface waters at night; other species became more concentrated on the bottom, suggesting that the launce may be taken in quantity by trawls only during daylight hours.

Poor weather conditions for this time of year hampered fishing operations and caused considerable loss of time. Surface water temperatures averaged 53° F.

North Atlantic Fisheries Investigations

DEMONSTRATION CRUISE MADE BY M/V "ALBATROSS III:" Due to widespread interest among members of the New England fishing industry in research conducted by the U. S. Bureau of Commercial Fisheries, a one-day demonstration cruise was scheduled by the Bureau's research vessel Albatross III on July 23, 1958.

During the course of this cruise guests were given an opportunity to observe the operations of equipment used in modern marine fishery research including underwater television techniques in use aboard the vessel.

Service's research vessel Albatross III

By viewing the monitor screen, it was possible to observe groundfish as they entered the net and their reactions in the cod end. Escapement of small fish through the meshes also were observed. Other types of scientific equipment including a bottom sampler, plankton nets, midwater trawl gear, etc., were demonstrated.

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GROUNDFISH BEHAVIOR STUDIED WITH UNDERWATER TELEVISION (M/V Albatross III Cruise 112): Studies of the behavior and orientation of groundfish were continued by the U. S. Bureau of Commercial Fisheries research vessel Albatross III by means of an underwater television camera. Observations were made between June 9-13 on Stellwagen Bank on the eastern edge of Massachusetts Bay.

The television camera was rigged at the end of a standard No. 41 trawl where behavior was observed in various cod ends extending 7 to 14 feet from the camera. Both open and closed cod ends were used and were towed at different speeds. Ground chain was substituted for wooden rollers on the ground rope. Observations were recorded on film and on tape.

Most species of groundfish on entering the cod end oriented upstream. The strength of this orientation appeared to be related to the towing speed.

The upstream orientation of some fish was so great that they continued to swim in the net when they could have easily slipped back through the cod end. An analysis of this behavior will be made from the moving picture films which recorded the observations.

Visibility was improved by the use of ground chain on the ground rope in place of wooden rollers which are believed to be a source of turbidity. Clear pictures were possible by natural daylight to depths of 132 feet. An interesting side light was a cod feeding on Ammodytes (launce or sand eel) while in the cod end.

* * * * *

NUMBER OF STATIONS REDUCED ON LIFE-HISTORY STUDIES OF SCALLOPS AND INDUSTRIAL FISH (M/V Jacquelyn): The complete planned circuit of stations off Rhode Island was made during a one-day cruise on June 12, 1958, by the M/V Jacquelyn (under charter to the U. S. Bureau of Commercial Fisheries). It was decided, however, to cut out one station on all future cruises so that the circuit may be made in winter and in bad weather with no trouble. The plan now calls for 3 fishing stations and one scallop station during each cruise.

All operations went satisfactorily and samples of scallops and fish were brought back to the station at Woods Hole for detailed study. Of note on this trip was the exceedingly large catch of eel pout. There have been indications recently in the industrial (trash) fish landings as well that there has been a buildup in this fish's numbers as compared with the numbers taken in the last three years.

More of the larger red hake were taken than was anticipated--a fact that will require further study.

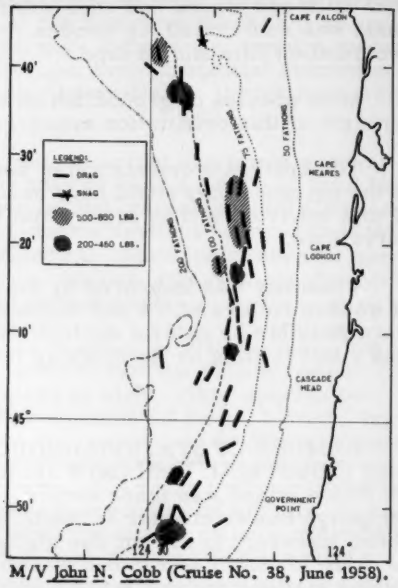
North Pacific Exploratory Fishery Program

EXPLORATORY FISHING FOR PINK SHRIMP AND TWO-TRAWL RIG TESTED OFF OREGON COAST (M/V John N. Cobb Cruise 38): Commercial concentrations of pink cocktail-size shrimp were located off the central Oregon coast by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb during a three-week exploratory cruise ending June 27, 1958. The area of exploration included the waters between Cape Falcon and Cape Foulweather, Ore. A total of 54 drags were made in the area at depths between 62 and 195 fathoms. All drags were made with a 43-foot flat shrimp trawl. No quantity of side-stripe shrimp (a larger variety of Pacific shrimp) were located during the cruise.

Best catches of shrimp were made off Cape Lookout, Ore., at depths ranging from 90 to 114 fathoms. Seven drags in this region produced catches at rates of 380 to 850 pounds per hour. Commercial catches were also taken off Manhattan Beach and Cape Foulweather. Drags made west of Cape Foulweather at depths from 80 to 99 fathoms yielded catches at rates ranging from 200 to 450 pounds per hour, while drags made off Manhattan Beach at depths from 96 to 105 fathoms caught shrimp at rates of 440 to 600 pounds per hour.

The largest concentrations of pink shrimp found during this cruise were at substantially greater depths than previously noted along the coasts of Washington and Oregon. During explorations conducted in 1955, 1956, and earlier this year best shrimp concentrations were found at depths between 60 and 85 fathoms.

Service's research vessel M/V John N. Cobb.



M/V John N. Cobb (Cruise No. 38, June 1958).

Oceanographic and biological observations were made at all stations and representative samples of the catches were preserved for laboratory analysis. The samples will be studied by biologists of the Oregon Fish Commission. Surface water temperatures off the Oregon coast were considerably higher than normally expected for the month of June and a high of 63° F. was recorded.

During the cruise, experiments were conducted on fishing two 43-foot nets simultaneously. The "Texas rig" method of fishing two nets at the same time, commonly used in the Gulf of Mexico, utilize twin booms or "outriggers" to tow one net from each side of the boat. Aboard the John N. Cobb the nets were fished from the standard trawl davits on the stern of the vessel. To preclude fouling, the nets were staggered so that one net fished about 20 fathoms astern of the other. No operational difficulties were encountered during five tests in which two nets were fished in this manner. The resultant catches indicated that the twin-rig method would probably double the yield obtained using a single 43-foot net.

Note: See Commercial Fisheries Review, June 1958, p. 37 and July 1958 for first two cruises in this series.

Oysters

SEED SCARCITY AND PREDATOR PROBLEMS IN ATLANTIC COAST OYSTER INDUSTRY UNDER STUDY: Fresh water is a "deadly poison" to the oyster--a bit of unslaked lime can be the beginning of the end for a starfish--and the oyster drill can't stand fences, if the fences have copper trimming. Such random bits of information, gleaned from fishery biology findings, are among the factors important to the U. S. Bureau of Commercial Fisheries program to help the American oyster industry solve its two toughest problems--scarcity of seed oysters and an abundance of predators. Another problem in which the Bureau is helping is the study of unexplained mortality such as that in which 40 to 95 percent of the oysters on the New Jersey side of Delaware Bay perished in the spring of 1957.

Skin divers carrying their own air supply will be utilized in certain phases of the underwater research.

Federal responsibility for oyster research rests with the Bureau of Commercial Fisheries, United States Fish and Wildlife Service. Management of the oyster resource is the responsibility of the respective States, many of which have research programs of their own on phases of the oyster problem.

Bureau officials indicate that their chief concern is with two predators--the oyster drill which is a perennial plague in oyster beds; and the starfish, an enemy which at times, for some unknown reason, surges to devastating proportions. The oyster drill is a slow-moving snail which fastens itself to an oyster, "drills" through the shell, and extracts the oyster meat. A third oyster predator, the blue crab, is a table delicacy in its own right and its value as a food usually outweighs or balances its liability as a predator.

The long-range attack on the oyster drill is being conducted at the Bureau of Commercial Fisheries laboratory at Milford, Conn. A more immediate remedial measure, a copper-trimmed fence, is being tested in the waters of Chincoteague Bay off the Maryland-Virginia boundary.

At Milford a search is being made for a selective poison which will kill the oyster drill but not injure oysters or other valuable sea life. (A similar quest for a selective sea lamprey poison was successful after five or six years of testing some 5,000 chemical combinations.)

Research has already proved that the oyster drill will not cross a copper strip or even a copper wire. The reason for this idiosyncrasy is not known but tests have borne out that the oyster drill will shuffle across steel, lead, zinc, aluminum, and other materials but not copper. Some research must be done to see if sea water, which varies chemically from place to place, has any effect on copper to make it less repulsive to oyster drills. Up to date no such condition has been found. Thus the problem is to design the best type of fence and develop the most inexpensive method of laying it.

The fence most acceptable to date is made out of plastic mesh, about a foot high, with concrete rods along the bottom for "sinkers" and plastic floats at the top. A copper strip near the top is the barrier the drill will not cross although it does climb the fence to the copper. The reason the copper is kept above the bottom is to protect it from being covered with silt or other material. The bottom of the fence must be buried a few inches to keep the oyster drill or other marine life from tunneling underneath it.

This year the fence will be put around a half-acre plot in Chincoteague Bay. Other tests are being made on plots which approximate 5 feet by 10 feet.

A third approach to the drill problem is now almost complete. It is an evaluation of the current industry practice of trapping oyster drills. A trap consists of a chicken-wire bag filled with young oysters and placed in an area infested with drills. The young oysters attract the drills away from the adults. In addition the young oysters offer an attractive surface on which the female drill can lay its eggs. The traps are periodically raised and cleaned. Research to date indicates that a trap's value is for a very limited area only.

The work on starfish control will be primarily an evaluation of present control now in effect. The big biological question which still must be answered is why the starfish has sudden increases in populations which often are ten times normal, as now evidenced in the Long Island Sound oyster beds.

The three current control methods are "mopping," dredging, and killing by chemical contact. Skin divers will be used in these evaluations.

Mopping consists of dragging a cotton "mop," several feet wide, across an oyster bed. The oysters are not affected but the sharp projections on the back of the starfish cling to the fibers of the mop and the predator is brought to the surface.

Dredging is in effect an underwater vacuum cleaning process in which oysters as well as starfish are sucked into the container and brought to the surface. The oysters can be replanted or marketed, depending upon conditions.

The chemical process now used by the industry consists of getting particles of granulated unslaked lime onto the starfish. This is done either by releasing the granules into the water and letting them sift down, or placing them more directly through an underwater spout. Lime particles reach the starfish and during the slaking process set up a condition in the starfish which leads to its destruction.

The scarcity of seed oysters is a perennial problem for the oyster industry. Current interest of the Bureau centers on the salt water ponds on Martha's Vineyard, an island off the shore of Massachusetts. Here the reefs almost isolate the bays from the sea. These "ponds" appear to have the various attributes necessary for seed production but the adult oysters which develop from Martha's Vineyard seed are too stunted to be of much commercial value.

Should Bureau research now being conducted prove that the oysters native to these salt water ponds are of a definite dwarf variety, the channels to the sea will be closed, fresh water will be introduced, and the native oyster colonies destroyed. The area will then be restocked with Long Island Sound oysters which will produce seed oysters of more commercial value.

The Bureau's current program relative to the 1957 Delaware Bay mortality consists of supplying very modest amounts of money for research which Rutgers University is doing for the State of New Jersey. This plague, which struck at the New Jersey shore but not at the Delaware side, was not predation, nor did it appear to be caused by pollution. There was no proof that it was the fungus disease which strikes at oysters in warmer waters or in warmer months. As yet the cause is unknown.

Pacific Oceanic Fishery Investigations

OCEANOGRAPHIC SURVEY MADE BY HELICOPTER: The first known attempt to conduct oceanographic surveys in the open ocean off Hawaii from a helicopter was completed on June 19, 1958, by the U. S. Bureau of Commercial Fisheries Pacific Oceanic Fishery Investigations (POFI) and the Kaneohe Marine Corps Air Station. The basic test was to determine whether the helicopter could complete the same mission as a surface ship, and the results have shown the test a success.

The HOK-1 helicopter was piloted by an Assistant Airfield Operations Officer, after the mission was authorized by the Commanding Officer of the airfield and two took the trip to make the observations from the air.

The survey extended from 50 miles north of Kaneohe to 50 miles south with one refueling stop. There were three scientific objectives--estimate the abundance of schools, collect samples of sea water, and measure the water temperature. Each was successful.

In order to estimate fish and bird abundance, the helicopter cruised at 50 feet above the sea, providing excellent visual scouting. There were no fish schools over most of the track, but about 40 miles north of Kaneohe several were sighted and birds were abundant. This information was relayed to the commercial fleet.

Sea-water samples and temperature measurements were made at predetermined stations identical to those occupied by POFI vessels when they conduct an "Oahu monitoring survey." When the helicopter came on station, it stopped, and let down to about 20 feet above the sea. The scientists then lowered devices to collect a water sample and measure temperature. Time on station was about one minute, and all stations were successfully occupied.

During this operation, the survey helicopter was escorted by a "navigator plane." This was necessary because helicopters do not carry as standard equipment the apparatus necessary for precise over-water navigation.

There are three important aspects to the problem of helicopters versus vessels for certain oceanographic missions. One is cost. The just-completed survey would take a POFI vessel about 36 hours at an operational cost of over $1,000. The helicopter costs about $90 an air hour, or about $450 for the operation. The second is the speed. The vessel takes 36 hours and the helicopter takes 4 or 5 hours. The shorter time period enhances the value of the data because time changes in the ocean are greatly reduced.

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NEW OCEAN CURRENT AND TUNA IN THE MARQUESAS SURVEYED (M/V Hugh M. Smith Cruise 45): The research vessel Hugh M. Smith of the U. S. Bureau of Commercial Fisheries returned to Honolulu on June 23, after an 88-day, 10,800-mile expedition in which 3 weeks were spent with the M/V Horizon of Scripps Institution of Oceanography, in a study of a newly-discovered ocean current, the Equatorial Undercurrent (now called the Cromwell Current). These investigations were part of the International Geophysical Year program, and were conducted about 1,500 miles southeast of Honolulu. The survey of the current was conducted on the Equator and to a distance of several hundred miles of each side of the Equator.

A new instrument and a new method were employed in these investigations. A current meter, lowered over the side of the drifting vessel, transmitted back to the ship through a conductor cable an electric signal which indicated the apparent direction and velocity of the ocean current. This information was corrected for the ship's drift in order to calculate the true current. To measure the ship's drift, it was necessary to have a fixed reference point. For this purpose deep parachute drogues, attached by wire cable to surface buoys, were placed at depths of about 3,000 feet; also other surface buoys were actually anchored to the bottom where the depth was $2\frac{1}{2}$ to 3 miles.

From the results obtained, this new current, which was first observed by the Fish and Wildlife Service about 4 years ago (by the late Townsend Cromwell, for whom it was named), may be described as a thin ribbon of fast-flowing water--a veritable river in the sea--moving eastward along the Equator beneath a shallow surface layer of westerly flowing South Equatorial Current. This "river" was about 200 miles wide from north to south and between depths of 100 and 500 feet at the longitude where it was studied. It occurs in a part of the Pacific Ocean where

only westerly currents were previously thought to exist. This survey completes the first real study of the current and gives an indication of its magnitude.

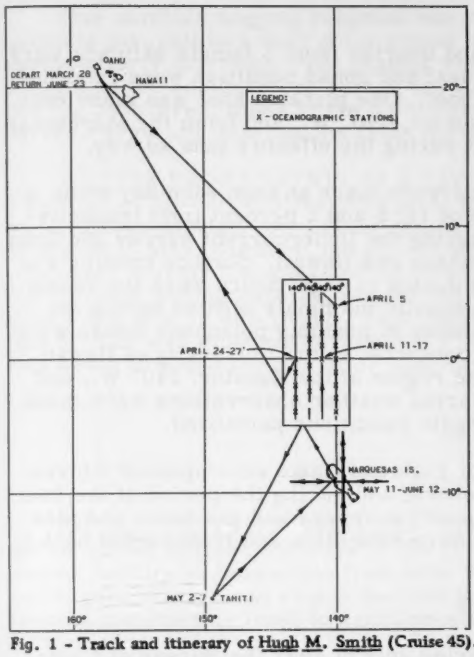

Fig. 1 - Track and itinerary of Hugh M. Smith (Cruise 45).

Upon completing this work, both vessels proceeded to Tahiti for refueling. The Hugh M. Smith then returned to the Marquesas Islands for a month of tuna fishing and baitfish studies. This portion of the cruise was the seventh and final investigation of the tuna and tuna-bait resources of the Marquesas area to be conducted by the Bureau. May and June are the fall of the year in that part of the Pacific and, as would be the case in Hawaii, it was found that the abundance of tuna had declined since the surveys in the summer months of January, February, and March. On the offshore portion of the survey, 45 tuna schools were sighted in 12 days, 23 were chummed and fish were captured from 11. Although the major objective was to sample the school and not to catch the maximum quantity of fish, the catch consisted of 307 skipjack of 4- to 6-pound size, 168 of 17 to 21 pounds each, and 90 of 24-25 pounds. Of these 311 were tagged and released. Of the 33 tuna schools sighted on 8 days of inshore survey, 6 were chummed and 2 were fished for a catch of 223 skipjack, averaging 4 to 6 pounds each. Of these, 163 were tagged and released. More schools would have been fished if bait had been available. But bait in the form of the Marquesan sardine was very scarce during the period of the cruise. Fortunately, however, the sardine is most abundant during the season of best tuna fishing, which is the Marquesan summer (January-March).

Bait in the form of the Marquesan sardine (Harengula vittata) was very scarce. Of the total of 325 buckets obtained, 230 were used in the offshore survey, 74 on the inshore survey, and 21 were secured near the end of the cruise for transport back to Hawaii. Of the baiting areas on Nuku Hiva, Taiohae Bay provided 219 buckets, Taioa Bay 52 buckets, and Comptroller Bay (Hanga Haa) 40 buckets. On Hiva Oa, 10 buckets were obtained at Taa Huku Bay, and 4 at Mana Menu.

The sardines ranged in size from 45 to 120 mm. ($1\frac{3}{4}$ to $4\frac{1}{2}$ inches); they withstood handling well and behaved well as chum. Length-frequency and gonad condition were recorded for samples examined at each baiting locality. A salinity and a plankton sample were obtained at each baiting locality.

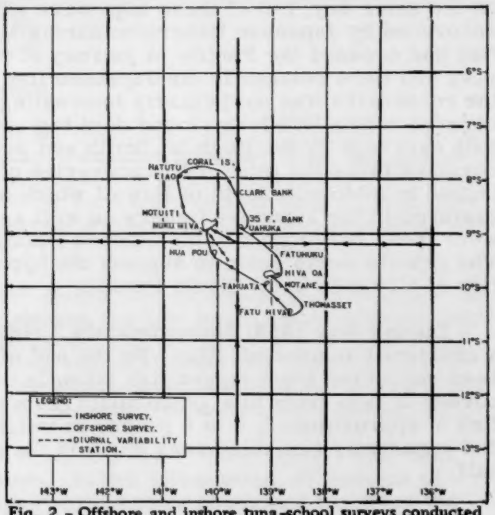

Fig. 2 - Offshore and inshore tuna-school surveys conducted by the Hugh M. Smith (Cruise 45).

A special study of sardine distribution, abundance, and biology in Taiohae Bay, Nuku Hiva, was carried out by one of the field party members who was stationed ashore during the period of the tuna surveys.

Stomachs from 5 males and stomachs and ovaries from 5 female skipjack were preserved from each school fished; length, sex, and gonad condition were recorded for 25 fish (occasionally less) from each school. One plankton haul was made each night on the runs between Hawaii and the Equator, 140° W., and from the Marquesas to Hawaii; and 3 hauls were made each night during the offshore tuna survey.

Secchi disc and water color observations were taken at noon each day while in the Marquesas. Using a photometer, depths of 10, 5 and 1 percent light transmission were measured at specified intervals during the Undercurrent survey and from 5° S. to 10° N. on the run between the Marquesas and Hawaii. Surface trolling was conducted with two lines at almost all times during daylight hours when the vessel was under way. All tuna schools, birds, and aquatic mammals sighted during the daylight runs were recorded. Several specimens of possibly poisonous fishes were frozen for use in fish toxicity studies being conducted at the University of Hawaii. Four night-light collections were made in the region of the Equator, 140° W., and one in Tautira Bay, Tahiti. The standard marine weather observations were made four times daily and transmitted whenever radio conditions permitted.

Two employees of the Hawaii Division of Fish and Game accompanied the vessel to the Marquesas where they were put ashore, and during the period of the tuna surveys collected about 3,000 reef fishes, mostly snappers and sea bass, and also 70 specimens of fresh-water shrimp, which were held alive and transported back to Hawaii for stocking.

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TUNA TAGGING DEVELOPMENTS: During July of 1957 the Bureau of Commercial Fisheries Pacific Oceanic Fishery Investigations conducted a Northeastern Pacific Albacore Survey, which involved the research vessels Hugh M. Smith, the John R. Manning, and several chartered vessels. During the course of this survey a number of tagged albacore tuna were released into the sea. Near the end of June, on the same day, two of these tags were returned from Japan where they had been recovered by Japanese fishermen during May and June 1958. Both of the tagged fish had crossed the Pacific, a journey of more than 4,000 miles, in less than a year and were retaken in the Japanese live-bait fishery off southern Japan. One of the recoveries was particularly interesting because it was the first albacore recovered with a POFI-developed dart tag. It was one of the 111 albacore released with dart tags by the Hugh M. Smith and John R. Manning during NEPAS. These recoveries bring the total POFI recoveries of tagged albacore to 11. There were fish tagged in midocean north of Hawaii which moved in both directions and were recaptured in the Japanese fishery as well as in the American fishery. And then there were these fish tagged in the eastern Pacific and retaken in the western Pacific. The results would seem to support the hypothesis that there is but a single population of albacore in the North Pacific.

During May 1958, approximately 2,000 skipjack tuna were tagged by POFI from a chartered sampan off Hilo. By the end of June over 16 percent of these tags had been recovered from tagged fish taken in the Hilo fishery. There had been no recovery of tags from this group apart from the Hilo fishery. These fish were small fish of approximately 4 to 6 pounds in weight and since the original tagging the fish had apparently remained very much in the same areas for more than a month and a half.

Approximately 2,000 tags were also released from another chartered sampan around the island of Kauai. Since the release, only a single tag has been recovered,

and this was recovered in the vicinity of Barbers Point on the island of Oahu.

This skipjack tagging program was originally designed in order to test the hypothesis that skipjack may enter island waters from the southeast and depart in a northwesterly direction. The tagging results to date would indicate that the fish present in the southeastern part of the archipelago were not moving, and aside from one tag recovered, those in the northwest had disappeared. However, it is yet too early to draw any conclusions from the information at hand.

TILAPIA PROPAGATION AS A LIVE-BAIT FISH: The production of tilapia as a baitfish at the cooperative pilot plant at Paia, Maui, had been since its establishment, disappointingly low. Some improvement was seen in the number of young produced in May; however, during the week ending June 6, only 7,750 young were produced. During the week ending June 13, the production increased to 17,250 young; for the week ending June 20, production was 44,000 young; and for the week ending June 27, it was 76,400 young. This rapid increase in production through the last half of June was most encouraging and contained a promise that the Paia installation would produce baitfish at or near the original estimates made for it.

Pacific Salmon Investigations

INITIAL TESTS ON "ENDLESS" FISHWAYS COMPLETED: The first tests on the so-called endless fishways at the U. S. Bureau of Commercial Fisheries Research facility at Bonneville Dam have been completed. The fishway is of endless rectangular design and raises the fish to a height of several feet and then drops them to the starting level to again ascend the fishway. In the initial tests individual salmon ascended the equivalent of 80 feet of elevation by making several "round trips." The fish have ascended a 1-8 gradient with a few signs of fatigue. Another endless fishway has the usual gradient of 1-16; fish moved less rapidly through this than through the 1-8 gradient. Use of the higher gradient fishways at dams would result in substantial savings in construction costs.

Salmon

POND-REARING STUDIES INITIATED BY OREGON FISH COMMISSION: Natural pond and lake rearing of juvenile salmon--heralded by some to be the answer to salvation of salmon runs in the Pacific Northwest--is under scrutiny by the Oregon Fish Commission with the idea of determining what applications such a program might have in the lower Columbia River system with particular reference to silver salmon.

The Assistant State Fisheries Director stated that experiments to evaluate the merits of releasing newly-hatched silver salmon fry into small impoundments were initiated by the Commission's research division as early as April 1957. Preliminary tests, which were completed this spring, demonstrated that under given conditions, silver salmon growth (without artificial feeding) was good for up to at least 10 months in ponds. Salmon survival in the two experiments varied considerably.

The research was conducted at two Willamette valley farm ponds--one near Aurora and the other in the vicinity of Salem. In the Salem pond, 87 percent of 4,500 silver salmon fry planted the previous spring were accounted for when the

pond was drained at the completion of the experiment. Growth of the fish on only natural foods present in the pond was considered good, and their survival was termed excellent.

Although growth of approximately 3,000 fry planted in the Aurora pond was better than growth of fish in the Salem pond, only 7 percent of the original plant could be accounted for when the pond was emptied. Discovery of at least 90 largemouth bass in the Aurora pond was more than likely the reason for the poor survival. Presence of the bass was not detected until several months after the experiment began.

The Assistant Director states, "We are reasonably convinced that juvenile silver salmon will fare well in certain ponds, but the basic question still unanswered is how well the fish will survive after they are released from a natural rearing pond." He said experiments with fin-clipped fish that have been raised in larger bodies of water will have to be carried out to gain information on this aspect of the natural rearing proposal.

The Commission now has two persons spending a major part of their time on the prospects of pond rearing salmon and steelhead. The program now amounts to finding suitable impoundments that can be used for larger-scale experiments. Particular attention is being given to raising small salmon in some of the lakes in the lower Columbia River gorge. Construction of one or more impoundments strictly for salmon production is being considered if suitable sites can be located.

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RESEARCHERS PROBE PROBLEMS OF PROPAGATION: A four-point program in the continuing effort to solve problems incident to salmon propagation was announced June 16 by United States Fish and Wildlife Service. Work will consist of research on disease, nutrition, improvement of hatchery techniques for Pacific salmon, and various studies related to the restoration of the Atlantic salmon.

The research will be done primarily by biologists and technologists of the Service but about half of the work on salmon disease studies will be contracted to State fishery agencies in Oregon and Washington and the University of Washington. The Service biological research facilities in Seattle, Willard, and Entiat, Wash., and in Boothbay Harbor, Maine, will be used in the investigations. Maine agencies are cooperating on Atlantic salmon projects.

The disease research will include studies on parasites as purveyors of disease in the hatcheries and in the streams; columnaris and relates ailments, especially on recognition and control of the virulent strains; red mouth disease; and laboratory probing of marine types of disease organisms and their relation to marine survival of salmon.

There are several nutrition studies in various stages of completion and work on these will be continued. These include salmon requirements of amino acid, fatty acids, vitamins, minerals and carbohydrates; development of water-soluble and fat-soluble vitamin test diets; and characteristics of digestive enzymes of salmonids.

Hatchery improvement at Entiat is for the development of improved techniques and equipment--rearing pond design, high humidity incubators, diversion, holding, spawning, accelerated maturation, algae control, and practical diet testing.

The headquarters for the Atlantic salmon restoration investigations will be in the Bureau of Commercial Fisheries laboratory at Boothbay Harbor, Maine, but

much of the work will be done in the Sheepscot River and its estuary, and at the Craig Brook fish cultural station of the Bureau of Sport Fisheries and Wildlife.

Atlantic salmon restoration research is a cooperative program with three Maine fishery agencies and the University of Maine cooperating with the U. S. Fish and Wildlife Service. The work includes fresh-water and marine survival studies, stream and estuarine ecology, and experimentation in salt water rearing of salmon to smolt size. Special emphasis will be placed on the salt water rearing of salmon to smolt size and if it is successful it might have considerable bearing on similar experiments with Pacific salmon.

Sea Lions

POPULATION CENSUS ALONG CALIFORNIA COAST: A census of the sea lion population along the California coast was begun the week of June 15, 1958, by the California Department of Fish and Game. The census, taken periodically, is for the purpose of determining fluctuations in abundance of the marine mammal.

Sea Lion

The last census was taken in 1947 and revealed a population of 8,700 sea lions from Crescent City to San Diego, Calif.

The count, which is made photographically by airplanes, takes about two days with suitable flying weather. Enumeration and evaluation of the figures, however, will not be completed until the end of July.

There are minor concentrations of sea lions up and down the coast during the breeding season, but the major concentrations are in five areas. These are St. George's Reef in the north, the Farallones and Ano Nuevo in central California, and the Channel Islands and the Coronado Islands in the south.

The two species found in these waters are the Steller sea lion and the California sea lion. The latter is the species most often trained as circus seals.

Shrimp

Pacific Coast States and Alaska Heads-On Shrimp Landings, 1957 and 1958

Area	1957	1956
	(1,000 Lbs.)	
Alaska	3,716	3,044
Washington	2,439	77
Oregon	230	6
California:		
Bay	500	719
Ocean	1,300	1,170
Total	8,185	5,016

SHRIMP LANDINGS ON PACIFIC COAST INCREASED IN 1957: Landings of shrimp in the States of Washington, Oregon, California, and the Territory of Alaska increased from about 5.0 million pounds in 1956 to about 8.2 million pounds (heads on) in 1957. The increase was due primarily to the discovery of new shrimp fishing grounds off the coasts of Oregon and Washington and availability of peeling machines for processing the small shrimp that make up the West Coast shrimp catches.

South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, APRIL-JUNE 1958: Oyster Research: Oyster studies during April-June 1958 have dealt primarily with growth and mortality of oysters; methods of producing seed oysters; cultivation of oysters in ponds; and some detailed studies on internal temperatures of oysters, according to Progress Report No. 36 (April-June 1958) of the Bears Bluff Laboratories.

Oysters began setting on May 17, with a heavy spat fall. Several types of cultch have been planted in We Creek and Wadmalaw River to obtain seed oysters. Seed oysters will be shipped soon, on an experimental basis, to the Virgin Islands, Louisiana, and New York State.

Two types of cultch are being tested for the Division of Tidewater Fisheries of Maryland. Dredged oyster shell and shell from the soft clam (Mya) have been shipped to the Wadmalaw Island Research Station where they were placed overboard in wire baskets. A comparison is being made between the normal South Carolina steamed shell cultch and these two types of cultch from Maryland. Since these tests could be made earlier in South Carolina than in Maryland, the results can help the Division of Tidewater Fisheries of Maryland decide whether or not this cultch is suitable, and allow them to plant with greater confidence. The Maryland dredged shell, so far, has proven almost as satisfactory as South Carolina steamed cultch. The clam shells, while catching a fair number of oyster spat, are not as suitable because of the lower survival rate than on oyster shells. Just why this is so has not yet been determined.

Good quality seed oysters collected last year on cement-dipped cardboard have shown good growth in the one-acre experimental pond during the year. In approximately 11 months the majority of these oysters have reached a length of three inches, with some even exceeding this figure. Seed oysters collected on steamed cultch and planted in the pond in 1957 have not grown as well; the majority are now from 2 to $2\frac{1}{2}$ inches in length.

Using a thermometer built into the core of a hypodermic needle, internal temperatures of oysters have been studied in relation to external temperatures. There is a considerable lag in the internal temperature of an oyster in an environment of changing temperatures. These investigations, being carried on under the Hughes grant, are still in their preliminary stages.

Note: See Commercial Fisheries Review, May 1958, p. 40.

Shrimp Survey: The brown-spotted or pink shrimp (Penaeus duorarum) were extremely abundant during the second quarter of 1958--roughly five times as abundant in experimental trawls as in the similar periods of 1953-1957.

White shrimp (Penaeus setiferus) have been and are still almost completely absent from South Carolina waters. Only a few large roe shrimp are occasionally taken in offshore waters. Almost all of the wintering-over population of white shrimp were killed by the extreme cold in February.

Brown shrimp (Penaeus aztecus) are unusually abundant this year. They first made their appearance in early June in creeks and rivers. By mid-June they had begun to enter the commercial catch in small size and in small numbers; however, during the last week in June, still small in size, brown shrimp are being landed at a rate of an estimated 10,000 pounds a day.

Fish Studies: Fish, particularly spot, croaker, mullet and menhaden, in June were beginning to become fairly abundant, but are about a month late this year.

Exploratory fishing off the coast in the second quarter of 1958 has been confined to one cruise out to the 50-fathom curve. A new depth recorder recently borrowed from the Gulf Fisheries Exploration and Gear Research station of the U. S. Bureau of Commercial Fisheries, has been installed and is an excellent help in offshore work. This recorder is capable of reading to a depth of 2,400 feet. On this cruise good catches of snapper, grouper, and scup or porgy were made east of Charleston.

Crab Studies: Due to the extremely cold winter, crabs were almost completely unavailable until after mid-March. Since then they have been more abundant than any year since Bears Bluff Laboratories has been keeping records on crabs.

The joint tagging program carried on by the U. S. Bureau of Commercial Fisheries out of Beaufort, N. C. and by this Laboratory, has shown some interesting results. The tag returns have not been numerous and the majority, by far, have been returned from within a few miles of the mouth of the North Edisto River where the crabs were released. However, tags have been returned from Charleston, 20 nautical miles to the north; from several localities in St. Helena Sound, 15 miles to the south; from the vicinity of Port Royal Sound, 30 miles to the south; and from St. George's Island, Florida, 150 miles to the south.

Transportation

PROPERTY TRANSPORTATION TAX REPEALED: The fishing industry will realize an estimated reduction in transportation costs of about $2 million annually because of the repeal of the 3 percent property transportation tax, as provided by the "Tax Rate Extension Act of 1958" (P. L. 475 - 85th Congress) which was signed by the President on June 30, 1958. This was the only tax reduction made by this session of Congress.

The bill provides for the elimination of the tax to be effective on all payments made for transportation of property on or after August 1, 1958, regardless of when the movement took place, with the exception of some oil pipeline movements, for which transportation must originate on or after August 1, 1958.

The transportation tax is levied on the payer of transportation for hire which includes rail freight and express; contract and exempt trucking; and domestic air and water transport.

Tuna

LOCATION OF PACIFIC SEAMOUNTS MAY AID FISHERY: A potential new source of tuna has been added to the Pacific tuna resources by new information for accurately locating seamounts, recently released by the U. S. Naval Hydrographic Office. Seamounts, or underwater mountains, have been demonstrated to be points of concentration of the rapidly-moving schools of offshore Pacific tunas. One known seamount was credited during 1957 as the source of tuna production valued at $2 million ex-vessel. The information now available on seven new seamounts could theoretically account for an astounding $14 million increase in tuna production; however, all seamounts are not equally productive and various other factors fluctuate, so that this theoretical value could be less.

As new Hydrographic Office charts are reprinted, the depth and location of each of these seven previously-unrecorded seamounts will be published.

The following soundings, 300 fathoms or less, with their approximate position, were found: 46 fathoms 07°10'N. 79°05'W.; 50 fathoms 07°20'N. 79°35'W.; 105 fathoms 01°26'N. 80°07'W.; 260 fathoms 00°57'S. 87°45'W.; 265 fathoms 25°00'S. 97°40'W.; 186 fathoms 25°55'S. 100°42'W.; and 160 fathoms 10°32'S. 137°43'W.

U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS EXPORTS, MARCH AND APRIL 1958: March 1958: United States exports of processed fish and shellfish in March 1958 were lower by 22.9 percent in quantity and 37.5 percent in value as compared with February 1958. Compared with the same month in 1957, the exports in March 1958 were down by 73.0 percent in quantity and 64.3 percent in value.

Table 1 - U. S. Exports of Edible Fishery Products, March 1958 With Comparisons

Item	Quantity			Value		
	Mar.		Year	Mar.		Year
	1958	1957	1957	1958	1957	1957
	(Millions of Lbs.)			(Millions of $)		
Fish and shellfish:						
Processed only (excluding fresh and frozen)	2.1	7.9	69.7	0.5	1.4	16.8

Table 2 - U. S. Exports of Edible Fishery Products, April 1958 With Comparisons

Item	Quantity			Value		
	Apr.		Year	Apr.		Year
	1958	1957	1957	1958	1957	1957
	(Millions of Lbs.)			(Millions of $)		
Fish and shellfish:						
Processed only (excluding fresh & frozen) 1/	1.3	3.2	69.7	0.3	0.7	16.8

1/ Includes pastes, sauces, clam chowder and juice, and other specialties.

April 1958: United States exports of processed fish and shellfish in April 1958 were lower by 30.0 percent in quantity and 40.0 percent in value as compared with March 1958. Compared with the same month in 1957, the exports in April 1958 were down by 58.4 percent in quantity and 57.1 percent in value. The sharp decreases in March and April 1958 in both quantity and value

as compared with the same months of 1957 were due primarily to a shortage of canned Pacific and jack mackerel, and California sardines.

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GROUNDFISH FILLET IMPORTS, JUNE 1958: Imports of groundfish (excluding ocean perch) fillets and blocks in June 1958 amounted to 10.2 million pounds. As compared with the corresponding month of last year, this was an increase of 79,000 pounds (less than 1 percent).

Canada was the leading country with 8.3 million pounds--an increase of 1.5 million pounds compared with last year. Denmark was next with 1.2 million pounds, followed by West Germany with 456,000 pounds and Iceland 163,000 pounds. The remaining 76,000 pounds were accounted for by the Netherlands and the United Kingdom.

Imports of groundfish and ocean perch fillets and blocks into the United States during the first six months of 1958 totaled 66.6 million pounds. Compared with the same period of last year, this was an increase of 139,000 pounds (less than 1 percent). Shipments originating in Canada comprised 69 percent of the total during the 1958 period, while Iceland made up 16 percent of the total, and Denmark accounted for 10 percent. The remaining 5 percent was represented by West Germany, Norway, Miquelon and St. Pierre, the Netherlands, France, the United Kingdom, Japan, and the Union of South Africa.

Note: See Chart 7 in this issue.

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IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA: The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1958 at the $12\frac{1}{2}$-percent rate of duty has been established as 44,693,874 pounds. Any imports in excess of this established quota will be dutiable at 25 percent ad valorem.

Imports from January 1-May 31, 1958, amounted to 16,035,401 pounds, according to data compiled by the Bureau of Customs. Last year from January 1-June 1 a total of 15,667,098 pounds had been imported.

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IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, MARCH 1958: Imports of most fishery products were lower in March 1958 than in March 1957. The major exception was for imports of canned salmon which were six times those of March 1957.

Imports of most fishery products declined in the first three months if 1958 as compared to the first three months of 1957. The only major products with increases in the first quarter of 1958 were swordfish, canned salmon, canned sardines, canned crab meat, and fish meal.

Exports of major fishery products in the first quarter of 1958 also declined, with the exception of frozen shrimp, shucked oysters, and sardines canned in oil, all of which were exported in larger quantities. Significant declines were noted in canned mackerel, sardines not in oil, canned California anchovies, and fish oils.

Imports: GROUNDFISH: In January-March 1958 the imports of groundfish fillets declined 17 percent below the same period in 1957. Imports of groundfish blocks were about the same in both periods. Total fillet and block imports in January-March 1958 amounted to 30.9 million pounds.

FROZEN TUNA: During the first three months of 1958 imports totaled 32 million pounds, or 13 percent less than the same period in 1957. Imports of frozen albacore declined 31 percent and imports of other tuna remained practically unchanged.

CANNED TUNA: Imports in January-March 1958 amounted to 8.6 million pounds, 2 percent more than those of the comparable period of 1957. Canned albacore tuna (2 million pounds) composed a much smaller share of the total canned tuna imports in the 1958 period.

TUNA LOINS AND DISCS: Imports during January-March amounted to 2.1 million pounds, an increase of 9 percent over the same period in 1957.

CANNED BONITO: Imports continued below the 1957 levels. Imports in January-March 1958 amounted to 2.6 million pounds, 34 percent below the same period in 1957.

CANNED SALMON: Imports of 6.7 million pounds in March 1957, a sixfold increase over March 1957, brought the total for January-March to 11.9 million pounds, an increase of 90 percent over the January-March 1957.

CANNED SARDINES: Imports for the first three months of 1958 were 7.5 million pounds, an increase of 29 percent as compared with the same period in 1957.

SWORDFISH: During the first quarter of 1958, imports totaled 4.7 million pounds, a little more than in the first quarter of 1957.

SHRIMP: During the first three months of 1958, imports of 15.1 million pounds were 2 percent less than in the same period of the previous year.

FRESH OR FROZEN LOBSTERS: Imports in the first three months of 1958 of 10.2 million pounds declined 19 percent below the first quarter of 1957.

CANNED CRAB MEAT: Imports in the first quarter of 1958 totaled 1.2 million pounds, 16 percent more than in the first quarter of 1957.

FISH MEAL: First quarter 1958 imports totaled 26,148 tons, 16 percent more than in the first quarter last year.

Exports: CANNED SARDINES: During January-March 1958, exports of sardines not in oil were 67 percent less than in the comparable period of a year earlier.

CANNED SALMON: In the first three months of 1958, exports were 335,000 pounds, down 67 percent from the 1957 period.

CANNED MACKEREL: In January-March 1958, exports of 1.5 million pounds were 84 percent less than the 9.4 million pounds imported in the first three months of 1957.

CANNED ANCHOVIES: Exports of miscellaneous canned fish (principally canned anchovies) during the first three months of 1958 totaled 746,000 pounds as compared with 4.9 million pounds for the same period of the previous year.

FISH OIL: Exports for January-March 1958 of 26.5 million pounds were down 25 percent from the same period a year earlier.

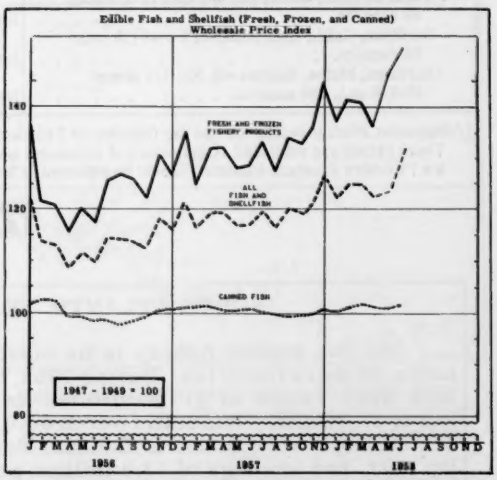
Wholesale Prices, June 1958

Over-all landings, stocks of frozen fishery products, and canned fish packs were lighter in June this year than for the same month in 1957. The June edible fish and shellfish (fresh, frozen, and canned) wholesale price index (131.5 percent of the 1947-49 average) increased about 2.3 percent over the preceding month and was 12.2 percent higher than for the same month of 1957. The June 1958 index was the highest recorded for any month since January 1947, the beginning of the base period for the current index.

Price trends for the drawn, dressed, and whole finfish subgroup were mixed in June this year with the increases just about offsetting the decreases (net decrease 0.7 percent). From May to June prices increased for fresh large offshore haddock (up 19.6 percent), fresh western halibut (up 16.0 percent), and Great Lakes yellow pike (up 15.8 percent). These increases were balanced by declines of 30 percent for whitefish at Chicago and New York and a 6.3-percent decline in fresh king salmon prices, due to seasonally better supplies. As compared with June 1957 prices for the subgroup this June were higher by 32.4 percent. Prices were higher in June this year than in the same month in 1957 for fresh large offshore haddock (up 59.0 percent), fresh western halibut (up 23.1 percent), red king salmon (up 21.0 percent), and yellow pike (26.5 percent); these increases more than offset substantial declines in Lake Erie and Lake Superior whitefish prices.

The fresh processed fish and shellfish subgroup rose by 6.0 percent in June this year as compared with the preceding month and was also up by 7.6 percent from June 1957. The catch of fresh East Coast shrimp was below normal and as a result prices at New York for 26-30 count headless shrimp jumped 8.9 percent from May to June this year and were higher by 10.6 percent as compared with June 1957. Fresh small haddock fillets at Boston were sharply higher (21.6 percent) this June as compared with the same month a year ago and 1.4 percent higher than the previous month in accordance with higher ex-vessel prices for drawn haddock.

Frozen processed fish and shellfish were higher by 4.2 percent in June this year as compared with the preceding month. Higher wholesale prices for frozen shrimp (8.6 percent) at Chicago more than compensated for a slight drop in prices for haddock and ocean perch fillets from May to June. All of the subgroup items (except for flounder fillets which were unchanged) were higher in June this year


Edible Fish and Shellfish (Fresh, Frozen, and Canned)
Wholesale Price Index
140
120
100
80
FRESH AND FROZEN FISHERY PRODUCTS
ALL FISH AND SHELLFISH
CANNED FISH
1947 - 1949 = 100
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1956
1957
1958

as compared with June a year ago and resulted in a 7.4 percent increase in the index for the group.

Canned fishery products prices in June this year when compared with the preceding month and with the same month in 1957 continued to show an upward trend. In June 1958 the

index increased 0.4 percent from the preceding month and was 3.5 percent above June last year. All canned fishery products, with the exception of Maine sardines (up 3.4 percent) were unchanged from May to June this year. But compared with the same month in 1957, the June 1958 index was higher because of increases of 26.1 percent for California sardines, 4.0 percent for tuna, and 0.7 percent for Maine sardines. In June this year the market was firm for most canned fishery products due to a healthy inventory situation and lighter packs, especially Maine sardines, California mackerel, and anchovies.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, June 1958 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices1/ ($)		Indexes (1947-49=100)			
			June 1958	May 1958	June 1958	May 1958	Apr. 1958	May 1957
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					131.5	128.6	122.9	117.2
Fresh & Frozen Fishery Products:					150.4	146.0	136.4	128.5
Drawn, Dressed, or Whole Finfish:					147.2	148.3	123.6	111.2
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.12	.10	121.6	101.7	80.9	76.5
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.40	.35	123.8	106.7	104.7	100.6
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.75	.80	168.5	179.8	149.2	139.3
Whitefish,L. Superior, drawn, fresh	Chicago	lb.	.54	.77	132.6	190.9	183.4	154.9
Whitefish,L. Erie pound or gill net, rnd., fresh	New York	lb.	.70	1.00	141.6	202.2	136.5	176.9
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.55	.48	129.0	111.4	72.7	102.0
Processed,Fresh (Fish & Shellfish):					151.3	142.7	142.0	140.6
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.37	.36	124.2	122.5	107.2	102.1
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.04	.95	163.5	150.1	148.5	147.8
Oysters, shucked, standards	Norfolk	gal.	5.63	5.50	139.2	136.1	139.2	142.3
Processed, Frozen (Fish & Shellfish):					139.7	134.1	132.4	130.1
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	103.4	103.4	103.4	103.4
Haddock, sml.,skins on, 1-lb. pkg.	Boston	lb.	.33	.34	102.0	106.7	109.9	91.0
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.30	116.8	118.8	118.8	112.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.99	.91	152.0	140.0	135.8	145.8
Canned Fishery Products:					104.7	104.3	104.3	101.2
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	23.00	23.00	120.0	120.0	120.0	120.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.65	11.65	84.0	84.0	84.0	80.8
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	5.68	5.68	132.4	132.4	132.4	105.0
Sardines, Maine, keyless oil, No. 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	7.75	7.50	82.5	79.8	79.8	81.9

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

NORTH ATLANTIC SEA SCALLOP FISHERY

The sea scallop fishery is the most valuable of the United States North Atlantic offshore fisheries. During 1955, total United States landings of sea scallops were valued at $11.4 million. In the same year, haddock landings were worth $8.1 million and ocean perch $6.0 million. Another $0.7 million worth of sea scallops were landed in Canada. New Bedford, Mass., the major sea scallop port, had landings of 13.9 million pounds worth $7.2 million.

--Fishery Leaflet 442, Sea Scallop Boats and Gear, August 1957.

FOREIGN

International

FIVE CENTRAL AMERICAN COUNTRIES SIGN TRADE AND INDUSTRIAL AGREEMENTS

Five Central American countries signed a multilateral free trade and economic integration treaty in Tegucigalpa, the capital of Honduras.

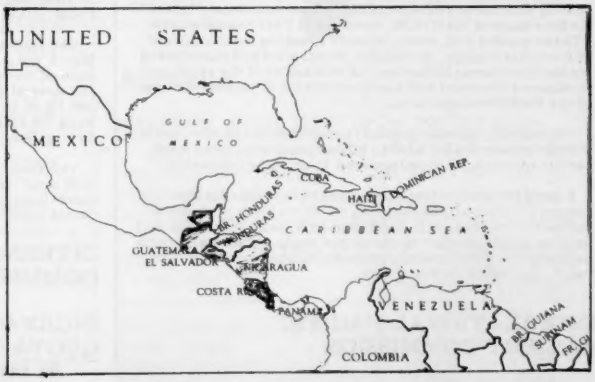
The signing of the treaty came at the close of the fifth session of the Central American Economic Cooperation Committee which has been meeting since June 4 in Tegucigalpa. The five countries concerned were Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua.

The Committee is a subsidiary organ of the U. N. Economic Commission for Latin America (ECLA) and works in conjunction with an intergovernmental body composed of the five Ministers of Economy. Panama has attended all the sessions of the Committee as an observer and has taken part in much of the work.

The Committee also signed an agreement on integrated industries which acts as a corollary to the free-trade treaty. It aims to establish Central American manufacturing activities that could not previously materialize due to the lack of an adequate market in each country. The over-all objective is to transform five small markets into one larger, more efficient market.

The treaty includes a long list of raw materials and manufactured products which will be exempt from customs duties and other taxes or restrictions in trade between the five countries. The list covers items which amount to about 3 percent of the countries' over-all trade, but covers items that amount to 20 percent of the trade between the five countries. The commodities and goods on the list will be accorded "national treatment" between all five countries. Trading items not mentioned in the list will be given unconditional and most-favored-nation treatment by all parties, thus according an exchange of goods at the lowest current rates of duty.

The treaty will take effect upon ratification by each of the parties. As soon as two countries ratify, it will take effect for those two countries. The new treaty was considered by the Committee as the first essential step toward a unified tariff system, multilateral free trade, and the integrated development of Central American industries. As such, it will form the basis for the gradual establishment of a common market covering all five countries. At least one speaker at the Committee meeting said it might lead to eventual political union.



In effect, the integration program has been a joint effort by the countries concerned and the United Nations. In some respects the Central American program

International (Contd.)

has acted as a precursor for the concept of a Latin American regional market.

Before the conclusion of the meeting in Tegucigalpa, the Committee adopted a series of 24 resolutions, in the main dealing with the future work of the program.

Some of these concerned continuing activities for economic integration, while others were procedural, for instance, establishing the Committee's next meeting for the first half of 1959. Approval was also given to a resolution proposing the standardization of import duties for foreign trade and dealing with agriculture, livestock, and fisheries.

FOOD AND AGRICULTURE ORGANIZATION

MEDITERRANEAN FISHERIES MEETING TO BE HELD IN ROME:

The Fifth Meeting of the General Fisheries Council for the Mediterranean (GFCM) will take place at the Rome Headquarters of the Food and Agriculture Organization (FAO), October 13-18, 1958.

The Governments of Egypt, France, Greece, Israel, Italy, Monaco, Morocco, Spain, Tunisia, Turkey, the United Kingdom (Cyprus, Gibraltar and Malta), and Yugoslavia have been invited to send delegations. The Governments of Bulgaria, Lebanon, Libya, Portugal, Rumania, Sudan, Syria, United States, and U.S.S.R, and a number of international organizations have been invited to send observers.

"We shall have a good many interesting technical papers dealing with fishery problems of the Mediterranean," stated the Secretary of the GFCM, speaking at FAO headquarters. "These papers will cover, broadly speaking, such subjects as fisheries biology, production, economics and statistics of the Mediterranean fisheries, the utilization of the catch, and problems concerned with the development of inland fisheries of the Mediterranean area. . . .

"Scientists, technicians and research workers who cannot attend the meeting but wish to submit papers on their work, can do so through the delegations from their countries."

Among the interesting subjects to be discussed at the forthcoming meeting will be the study of the trawling grounds of the Mediterranean. It is hoped that eventually the GFCM will be able to publish the results of this study, detailing the size and location of the trawling grounds, nature and extent of the catch, and other relevant data.

INTERNATIONAL PACIFIC HALIBUT COMMISSION

FIRST SEASON IN AREAS 2 AND 1B CLOSED:

The International Pacific Halibut Commission announced the closure of the first season in Areas 2 and 1B to halibut fishing effective at 6 a.m. (P.S.T.) July 2, 1958, until the beginning of the second fishing season in these areas. The Commission estimated that the 26.5-million-pound limit set for Area 2 would have been caught by that date. Area 1B which has no catch limit was also closed when the quota for Area 2 was attained. The Commission announced the closure on June 23.

The official opening date for halibut fishing in the Pacific regulatory area this year was May 4 at 6:00 a.m. (P.S.T.) except that fishing in Area 3B commenced on April 1, 1958. In 1957 the opening date was May 1, but the Canadian fleet did not sail until May 3 and started fishing about 5 days after the United States fleet because of a labor-management dispute over certain fringe benefits and "lay" apportionments. In 1956 the official opening date was May 12, but both the United States and Canadian fishermen voluntarily agreed not to start fishing until May 20.

Areas 2 and 1B this year were open to halibut fishing for 59 days as compared with 47 days in 1957 and 46 days in 1956 (because of the voluntary agreement to start fishing on May 20, actual fishing took place for only 38 days). These same areas were fished for 24 days in 1955, 21 days in 1954, and 24 days in 1953.

The grounds in Area 2 off Masset at the north end of Queen Charlotte Islands and off Timbered Islet off the west coast of Prince of Wales Island in southeastern Alaska, which have been closed for a number of years as small fish grounds, were opened in 1958 only, to utilize an accumulation of large and old halibut which have been revealed in those areas by the Commission's experimental fishing.

The longer period required to catch the Area 2 catch limit is attributed to (1) the difficulty of vessels catching capacity loads early in the season, (2) the continuation of the lay-over between trips initiated in 1956 except that the period was extended from 7 to 8 days in 1957 and (3) a smaller fleet.

The second fishing season in Areas 2 and 1B is scheduled to commence at 6:00 a.m. (P.S.T.) August 31, for a period of 7 days without a catch limit, except that in Area 2 the Cape Scott and Goose Islands grounds in Queen Charlotte Sound at the north end of Vancouver Island shall be closed to halibut fishing during the second season. Thereafter, these areas are closed to halibut fishing until the commencement of the halibut fishing season in 1959. Area 2 includes all convention waters between Willapa Bay, Wash., and Cape Spencer, Alaska. Area 1B includes all convention waters between Willapa Bay and Heceta Head, Oreg.

Area 3A with one fishing season opened on May 4 and will close when the catch limit of 30 million pounds has been attained. Area 3A is between Cape Spencer and a line running southeast one-half east from Kupreanof Point, Alaska, near Shumagin Islands.

The fishing season in Area 1A extends from 6:00 a.m. May 4 and will end at 6:00 a.m. October 16 or to the closure of Area 3A, whichever is later. In Area 3B the season opened April 1 this year and it will extend to October 16 or to the closure of Area 3A whichever is later. Area 3B includes all waters west of Area 3A including the Bering Sea. Area 1A is south of Heceta Head, Oreg.

The fishing season in all areas automatically closes at 6:00 a.m. December 1, 1958, if not already closed by catch limit or date prior to that time. This closure continues until the season is opened in the following year.

INTERNATIONAL WHALING COMMISSION

INCREASE IN BLUE-WHALE UNIT QUOTA PROPOSED AT MEETING:

At the meeting June 23-28, 1958, of the International Whaling Commission, the Japanese, with the support of the Netherlands, were expected to request an increase in the Antarctic blue-whale unit quota of from 14,500 units to 15,000 units. An official of the Netherlands Ministry of Fisheries has stated that his office is in possession of data which clear-

International (Contd.):

ly shows that a limit of 15,000 blue-whale units would not be damaging to the supply. The 14,500 blue-whale unit quota was imposed for the first time on the catch for the 1956/57 season, the United States Embassy at The Hague reported on June 13, 1958.

(NORTH EUROPEAN) INTERNATIONAL FISHERIES CONVENTION

U. S. S. R. ACCEDES TO CONVENTION:

The Soviet Union has acceded to the International Fisheries Convention of 1946. This achieves 100 percent coverage of the nations regularly fishing in the eastern part of the North Atlantic and also of those fishing in the North Sea, according to the May 23 issue of The Fishing News, a British fishery periodical. The United Kingdom Government, as the depository Government for the Permanent Commission set up under the Convention, has notified all the contracting governments concerned of the accession.

The accession is notable not only for its final achievement of 100 percent alignment of the nations concerned, but because it will inaugurate an era in which the whole principle of the conservation of fishing stocks in the areas concerned will be observed by all nations engaged in the industry. The immediate practical outcome of Russia's action will be that her nationals will be required to observe the mesh regulations and size limits embodied in the Convention. In addition, the valuable aid of her scientists and fishery technologists will be available in considering further measures that may be necessary for implementing the principle of conservation and maintaining the stocks of fish to give maximum yield.

As is now well known, Russia has embarked on a big campaign to develop her fisheries. Her present catch from the Arctic waters, the North Atlantic, and the North Sea areas is placed at about 2,500,000 metric tons--practically as much as is taken by all the other nations concerned--but future estimates place her prospective landings at 5,000,000 tons by 1975. To achieve this, her present fleet of factoryships consisting of 24 Pushkin-type stern trawlers is being supplemented by a further 70 with additional expansion later, while her normal fishing fleet comprising motherships and supplementary catchers is being heavily enlarged.

Angola

FISH-OIL INDUSTRY:

Angolan marine fish-oil production amounted to 11,200 short tons in 1957 as compared with 5,200 tons in 1956, according to Foreign Crops and Markets of May 5, 1958, a United States Department of Agriculture publication. Since the record output of 13,000 tons in 1954, fish-oil production has fluctuated considerably from year to year depending on market prices and the availability of fish. It is estimated that about 13,200 tons of fish oil will be produced during 1958.

Angolan exports of fish oil amounted to 13,400 tons in 1957 as compared with 5,700 tons in 1956. West Germany has been the principal market for fish oil. It is estimated that about 13,200 tons will be exported from Angola during 1958.

Australia

FROZEN FISH IMPORTS INCREASE:

Australian imports of frozen fish during July-February of the 1957/58 fiscal year were 28 percent higher in volume

Australian Frozen Fish Imports, July 1957-February 1958 with Comparisons

Source	8 Months	
	1957/58	1956/57
	..(1,000 Lbs.)..	
New Zealand	4,558	5,339
South Africa	4,411	4,068
United Kingdom	3,928	2,337
Denmark	1,886	388
Hong Kong	365	5
Japan	363	-
Norway	203	78
Jamaica	-	223
Netherlands	177	86
Germany	79	7
Iceland	67	-
China	41	-
Norfolk Is.	16	-
United States	-	4
Total	16,099	12,535

Australia (Contd.)

than for the corresponding period of 1956/57, and the value was up from £987,130 to £1,488,247 (US$2.2 million to $3.3 million).

However, it should be remembered that during 1957/58 import restrictions were relaxed and also placed on a different basis. (Australian Fisheries Newsletter, May 1958.)

* * * * *

REPORT ON JAPANESE CANNED FISH IMPORTS AND DOMESTIC CANNED FISH TRADE:

The Australian Minister for Trade announced earlier this year that he had accepted a recommendation by the Advisory Authority on the Japanese Trade Agreement that no emergency action be taken on behalf of the Australian fish canning industry. Accompanying the Minister's announcement was a "Summary of a Report by the Advisory Authority on Imports of Canned Fish from Japan." The report states:

On November 25, 1957, representatives of the Australian fish canning industry asked the Minister for Trade to consider a request for protection against imports from Japan.

The Minister on December 3 asked the Advisory Authority to advise (a) if they considered that the industry was likely to suffer serious injury as a result of the Trade Agreement and (b) if so, what action should be taken by the Government to overcome this situation.

The Advisory Authority conferred with representatives of the fish canning industry in Melbourne on December 19. Further information requested was received on February 20. Canned fish importers nominated by the Associated Chambers of Commerce of Australia were also interviewed. The main conclusions arrived at as a result of these interviews were:

(a) The reductions in duty arising from the Trade Agreement varied slightly in favor of Japan; the wide competitive margins existing before the agreement, and to the extent to which they created new opportunities for Japanese imports of canned fish was at the expense of other supplying countries rather than the Australian industry.

(b) The Australian industry would not obtain any worthwhile assistance by the restoration of the position that existed before the Agreement or even by action, beyond simple restoration, aimed at Japan alone.

(c) If the Australian industry was to be assisted by discouragement of, or impediments to imports, such discouragement to be effective should extend to all classes of fish and to all sources of supply.

The Advisory Authority therefore recommended to the Minister, consistent with their belief, that the Australian industry is not likely to suffer serious injury as a result of the Japanese Trade Agreement. It was recommended that no emergency action be taken.

In the last three years total sales of Australian canned fish have been:

	1,000 lbs.
1955	5,054
1956	5,320
1957	7,058

The industry has clearly suffered no setback in the last six months of 1957 when the Trade Agreement with Japan was in operation, as sales in the last six months of recent years have been:

	1,000 lbs.
1955	2,370
1956	2,483
1957	3,162

Nevertheless Australian canners contend that competition from Japan prevented sales from increasing to levels that otherwise would have been reached. Stocks from an increasing supply of fish processed accumulated, and at the end of December 1957 were 66 percent higher than at the end of 1956.

The species of fish canned in Australia are important. In 1957 the quantity of each sold in Australia was:

	1,000 lbs.
Australian salmon	4,675
Barracouta	1,443
Tuna	940
Total	7,058

More than half of the Australian canned fish pack consists of a fish which is called "salmon" but which is really a species of perch. Australian canners agree that the salmon canned by them is not comparable with imported salmon but contend that their production is competitive with lower grades of Japanese salmon, which they claim makes up the bulk of imports.

This is not supported by the available statistics, or by importers. Importers claim that by far the bulk of salmon imports consists of higher quality fish. The present c.i.f. price of fancy pink salmon is 3/8 (41 U. S. cents) per pound yet the average f.o.b. price per pound of Japanese salmon landed in Australia in recent years has been: 1954/55, 5/-(56 U. S. cents); 1955/56, 4/3 (48 U. S. cents); 1956/57, 4/-(45 U. S. cents).

These figures show that most imports have been of a better quality than "Fancy Pink" and that they are not likely to be competitive, even on the Australian canners' own assessment. Selling prices of Australian "salmon" range from 23s. to 26/6 (US$2.58-29.3) per dozen 8-oz. cans. The landed duty-paid cost of Japanese salmon in similar size cans per dozen are approximately: sockeye, 41s. 6d. (US$4.65); cohoe, 31s. 10d. (US$3.57); pinks, 24s. 9d. (US$2.77); chum, 23s. 6d. (US$2.63).

Imported fish is subject to 12½ percent sales tax; Australian fish is exempt. The result is that the cheapest Japanese fish would carry an extra cost of at least 3s. per dozen and would not be cheaper than the dearest Australian fish; but as already pointed out the average value of actual imports is very much higher than the price of the cheapest quality.

So far as the volume of imports from Japan is concerned, statistics disclose that the value of salmon imported from Japan during the six months of the current financial year was lower than in the corresponding period of the two previous years:

Australia (Contd.):

July to December		
1955/56	1956/57	1957/58
£859,000 (US$1,924,160)	£474,000 (US$1,061,760)	£453,000 (US$1,014,720)

That is to say, despite the reduction of duties as a result of the Trade Agreement, imports of salmon from Japan have been lower since the Agreement than before it.

A second claim by the Australian industry is that imports of canned mackerel have resulted in a loss of trade by Australian canners of barracouta. It is not possible to identify mackerel in import statistics for they are classified under a statistical group "Other" which includes a variety of fish.

A third claim by the Australian fish canners concerns tuna. Practically no licences have been issued to import tuna in the last four months. As this species of fish is well accepted on the Australian market, the local canners have little difficulty in disposing of their limited stock, especially when availability in terms of imports is very low. (Australian Fisheries Newsletter, May 1958.)

Canada

NEWFOUNDLAND FACTORY TO MAKE FISH-SKIN GLUE:

One of the world's biggest producers of adhesives has opened a new fish glue plant in St. John's, Newfoundland. Preliminary production began January 22 and the plant expected to reach full-scale operation in early February.

Construction of the concrete-block building was begun June 1957 and was completed in November. The installation of manufacturing equipment took approximately two months. Some of the equipment was brought from the company's original fish-glue plant at Gloucester, Mass., while additional equipment was fabricated by St. John's contractors. The plant has employed nine men.

When located in Gloucester, the company bought cod skins from three companies in Newfoundland. Last year, it was decided to close the Gloucester plant in view of rising costs of production. The demand for fish glue has steadily declined both in the United States and Canada, largely as the result of price competition with animal glue and synthetic adhesives. Commenting on this aspect, a company spokesman said: "In closing our Gloucester plant and opening a plant in Newfoundland, we hope to get the cost of fish glue on a more competitive footing. Increasing sales should follow."

The St. John's plant will be the largest producer of fish glue in the Atlantic Provinces. There are three others, located at Lockeporte, N. S., Black's Harbour, N. B., and Saint John, N. B.

The new plant will utilize both fresh and salted cod and haddock skins. The company will secure its fresh skins from fish plants within a 200-mile radius of St. John's. Salted skins may be obtained from plants at greater distance from the glue factory, and, in addition, local supplies may be augmented by importations from European sources.

Cod and haddock skins are the most desirable of fish skins because they have a high degree of collagen (protein) with very little or no contaminating oil. The skins have little commercial value as meal because they foul fish meal manufacturing equipment and cause costly stoppages. Consequently, their use in fish glue becomes an important part of the economics of fish-plant operations salvaging a part of the fish which would otherwise be wasted.

The basic fish glue process has changed little over the years since the first plant began operations at Gloucester, Mass., in 1880. The skins are washed to remove the salt. The collagen is then cooked out of them, and the "glue liquor" thus produced is evaporated down to the desired viscosity. Preservatives and other chemicals are added and the product is ready for sale.

When the glue has been extracted from the fish skins, the residue can be utilized in fish meal. The company is understood to have made arrangements with a Newfoundland firm to handle this byproduct of the operations.

Fish glue makes an excellent woodworking adhesive and is also used as an additive in many other kinds of glue where its unique properties, high initial tack, and remoistenability are valuable.

Canada (Contd.):

The St. John's plant will operate seasonally, to some extent, as do the fish plants. It is anticipated that the Newfoundland cod and haddock catch will provide considerably more than enough skins for the operation of the plant. Should lower costs be realized, however, the product will be priced more competitively and an increasing sales volume would result in increasing production.

Working at full capacity, the plant will process approximately 100 tons of fish skins each week. The glue product, which will be in a semi-processed state, will supply part of the requirements of the company's plants in the United States and Canada. (March 1958 Trade News of the Canadian Department of Fisheries.)

* * * * *

NEW RESEARCH VESSEL LAUNCHED: The M/V A. T. Cameron, a new research vessel of the Fisheries Research Board of Canada, was launched on May 30, 1958, at Sorel, Quebec. The vessel was named for the late A. T. Cameron, who for 13 years prior to his death in 1957 was chairman of the Research Board.

After the vessel is commissioned she will go into service in Atlantic and Arctic waters, based at St. John's, Newfoundland, for about two-thirds of the year and at Halifax the remainder of the time. Her length is 177 feet and her breadth 32 feet. She will carry a crew of 25 and will have accommodation for 9 scientists and technicans. There will be 5 laboratories, each fitted out with modern equipment and gear for various research procedures as well as oceanographic, hydrographic, and survey work. There will also be an 1,800-cubic-foot fish hold.

The A. T. Cameron was built along trawler lines; Diesel powered; and her hull is strengthened for navigation in ice. As she will be required at times to make extended trips of from

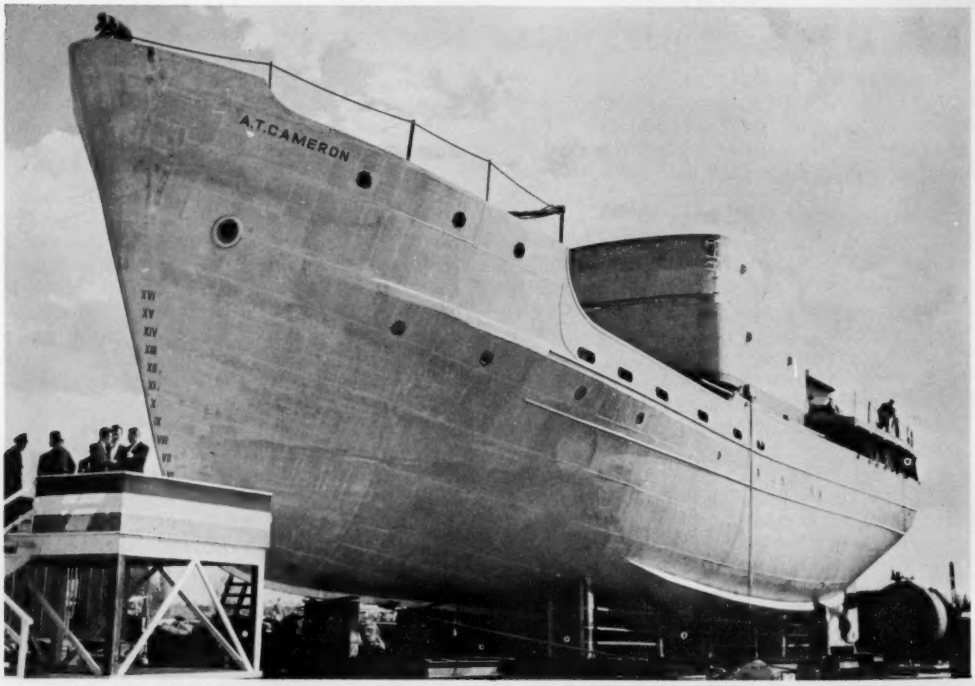


Fig. 1 - The A. T. Cameron, new research vessel of the Fisheries Research Board of Canada, in the shipyards of the builders.

Canada (Contd.):

6-8 weeks' duration, provision was made for a cruising range of 7,500 miles without refueling.

Fig. 2 - Scene immediately after the christening of the A. T. Cameron.

The new vessel was originally designed in England, but was finally built to design plans and specifications prepared by Montreal naval architects to meet the requirements of the Research Board. The main hull is of steel and the superstructure of aluminum. Navigational and scientific survey equipment aboard will include the latest radar, depth sounding, and other electronic devices. Two radar sets will be provided for long, intermediate, and short-range protection, thus enabling the use of one set in survey operations while the other is in use for safe navigation. The cost of the vessel, complete with modern scientific equipment, was nearly C$1,750,000.

* * * * *

NEW TYPE HERRING TRAWL DEVELOPED FOR MIDWATER OR BOTTOM FISHING:

In 1951 Canadian herring fishermen began trying European-style midwater trawls for taking autumn and winter herring in British Columbia waters. In 1954 the Fisheries Research Board's biological station at Nanaimo, B. C., undertook the development of a midwater trawl and associated gear for use on single boats of about 150 to 175 horsepower.

Construction of Trawl and Associated Gear: The use of nylon and the technique of brailing fish from the cod end allowed the employment of light netting with little water resistance. The net is 35 feet square and 180 feet long. Mesh sizes range from 5 inches in the wings and square to 1-1/4 inches in the cod end. The four 75-foot "head" ropes are of combination wire-manila. Rib lines are 5/16-inch braided nylon. The "zipper" cod-end opening is 36-feet long. Curved, 5-1/2- by 3-foot plywood otter boards with stabilizing fins are suspended from 10-fathom pennants. Eleven aluminum, lifting trawl floats are attached about 2 feet apart in the center of the top "head" rope. A leadline of braided nylon with about 25 pounds of small sectional leads is attached along the bottom "head" rope at 18-inch intervals. Depressors are used on the towing lines just ahead of the lower wings. The towing lines (dandylines) are 3/8-inch galvanized wire rope 30-fathoms long.

Operation of the Trawl: Herring are located with an echo-sounder. The net is shot over the stern. Trawl depth is controlled by speed and by the length of the towing warps and is calculated from the angle of descent of the warps. In hauling, the otter boards, depressors, and body of the net are brought aboard and the cod end is secured alongside before opening the "zipper" to make the catch available for brailing.

Dual-Purpose Otter Board: The plywood otter boards work well at mid-depths, but are easily damaged upon contact with the bottom, which is likely when attempting to catch herring near the bottom. A V-shaped dual-purpose aluminum otter board, which is stable in midwater at speeds of 2 to 6 knots, was developed in 1956.

Early Fishing Tests: Herring in British Columbia waters during January and February occur in dense, 5- to 10-fathom thick layers and tend to rise toward the surface in the evening and descend at daybreak. Catches during these times were 20 to 30 tons per 30-minute tow. Catches were smaller at night. Two daylight tows caught 15 and 35 tons. The more active autumn fish were taken in amounts of 5 to 15 tons per half hour at mid-depths, and in amounts of 20 to 75 tons in 20- to 30-minute tows with the net "flying" just off the bottom. Conventional otter-boards, which ride the bottom, were used.

Commercial Use of the Trawl: In the late autumn and winter of 1955 to 1956, fish..g close to the bottom with conventional otterboards, seven trawlers took 2,000 tons of herring averaging 5 to 6 tons per half-hour tow. In the winter of 1956 to 1957, 19 trawlers took part in the fishery.

Midwater Trawls for Faster-Swimming Fish: Work is continuing on the development of a midwater trawl capable of catching the more active summer herring and other fast-swimming fish. Two approaches are being made to the problem: (1) a small, strong net, for towing at fast speeds and (2) slow-moving trawl with a large opening (article by the Fisheries Research Board of Canada which appeared in the December 1957 issue of the Canadian Fisherman).

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RECORD HALIBUT TRIP LANDED AT VANCOUVER:

The 74-foot steel-hulled Silver Viking II arrived at Vancouver, British Columbia, on June 25, 1958, with the largest catch of halibut to enter that port since the days of steam and line-trawling for halibut from dories or as far back as about 1918.

The Silver Viking II came in with about 1½ feet of freeboard and 172,000 pounds of halibut from the Gulf of Alaska

Canada (Contd.):

area. The round trip took 30 days, but only 10 days were spent fishing. The catch sold ex-vessel for 15 cents a pound for 2,000 pounds of chicken halibut; 22.6 cents for 120,000 pounds of mediums; and 22.5 cents for 50,000 pounds of large. The trip brought a gross stock of C$38,670 and each member of the crew shared about $3,000.

This was the maiden voyage for the Silver Viking II--she is the first steel-hulled all-purpose fishing vessel in Canada's west coast fleet. The vessel has a capacity of 160,000 pounds of halibut in her brine tanks, and can carry another 30,000 pounds of iced fish. The Captain of the vessel reported that halibut were plentiful and the weather was good except for two days.

The vessel proved all her designers' claims--took the weather well, and averaged 9 knots on the trip home. The big feature of the trip was the performance of the brine tanks. The fish were unloaded in Vancouver as firm and fresh, with absolutely no sign of bruising, as they were the minute they came out of the water. A high proportion of the fish were large--running around 150 pounds each. The crew set an average of 40 skates a day, and landed about 2,300 pounds per skate (Canadian Broadcasting Company, Farm and Fisheries Department news release).

Cuba

FROZEN COOKED TUNA LOINS NOT BEING PRODUCED:

Although the new joint Cuban-Japanese fishing firm intends to produce tuna "hams" and "sausages," a reliable source advises that no such production has as yet occurred.

The Japanese fishing vessel Sumiyoshi Maru (used as a training vessel for Cuban fishermen and also as a fishing vessel) returned from its second training voyage with Cuban trainees about the middle of March 1958. On its second voyage it had reportedly encountered another Japanese fishing vessel off the coast of Brazil and exchanged skipjack, marlin, etc. for already filleted tuna.

The Sumiyoshi Maru returned from its first voyage with 11,448 pounds of tuna; the remainder of the 300-odd tons of fish caught consisted of species other than tuna.

The purely Cuban catch of tuna by Cuban fishermen does not supply all of the Island's domestic requirements, making it necessary to import substantial quantities of canned tuna from Spain, United States, and Portugal.

In Cuba tuna is not processed (tuna, albacore, bonito, etc.) in cooked and frozen fillets or loins, reports the Cuban National Fisheries Institute. Therefore there are as yet no producers of such products.

The bonito and similar species discharged in Cuba from vessels under Cuban registry are used for canning for internal consumption. The pack is not sufficient for domestic needs as there is a considerable importation of similar products to meet the requirements of the Cuban market. In 1957, 4.2 million pounds of these species were fished.

The Japanese vessel Sumiyoshi Maru which fishes on the high seas with long line and with which the Institute has entered into a contract for the training of Cuban fishermen in this type of fishing, on its first voyage brought in 110,448 pounds of fish, a small amount of which consisted of tuna, albacore, etc. On its second trip it brought in 477,738 pounds already filleted and 78,521 pounds in large pieces and heads-off fish. All this fish was discharged and processed by the joint Cuban-Japanese firm at its Rincon de Melones plant, in Havana, and was exported frozen to the United States.

Note: Also see Commercial Fisheries Review, June 1958, p. 65, April 1958, p. 55.

Denmark

EXPERIMENTS ON USE OF NYLON THREAD IN OYSTER CULTURE DISAPPOINTING:

An oyster crop was planted last year for the first time in the Limfjord, Denmark, on nylon threads with the date of planting marked on a bobbin attached to the thread. The industry thought that this method would do away with the wastage caused by scraping, a harvesting operation in which about one third of the oysters are either smashed or drowned. The industry failed, however, to consider the difficulties caused by mussel larvae which attached themselves to the young oysters and suffocated them.

Beginning in April of this year, the industry expected to make another attempt to plant oysters attached to nylon threads, but would raise the threads above the surface for a few minutes every fifth day. It was believed that this process would dry up the mussel larvae and not affect the hardier oysters.

At the end of the oyster season it appeared that the harvest this season would be approximately 25 percent less than last year, states an April 1 dispatch from the United States Embassy at Copenhagen. The industry believes the decrease was due to the difficulties in scraping operations caused by ice, but it seems that the industry has not yet overcome the loss of oysters during the 1955/56 winter when several million oysters died of starvation.

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PROPOSED EXTENSION OF FISHING LIMITS BY FAROESE MAY HURT FISHERMEN:

The unilateral decision of the Faroe Islands authorities to extend Faroese fishing jurisdiction to 12 miles, has aroused feelings of apprehension amongst Danish fishermen. They foresee the possibility of German retaliation should Faroese-Danish discussions on the matter end in an endorsement of the extension. Danish fishermen have had traditional interest in fishing grounds within nine miles of German territorial waters in the North Sea. Although these grounds are of lesser importance than the Dogger Bank area to the north, their closure by German extension of fishing jurisdiction to 12 miles would deprive the Danish fishing industry of a substantial source of income, the United States Embassy at Copenhagen reports in a June 10, 1958, dispatch.

Egypt

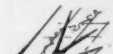
JAPANESE-EGYPTIAN FISHING COMPANY TO TRAWL IN MEDITERRANEAN AND RED SEAS:

An Egyptian-Japanese fishing company has been founded in Alexandria, Egypt, with the financial participation of the Egyptian Government. It is proposed to create agencies of this company in other countries bordering the Mediterranean Sea, Red Sea, and the Gulf of Aqaba. Japanese trawlers will operate in the Red Sea and the Indian Ocean. (Giornale della Pesca, December 1957).

Faroe Islands

BRITISH CONVENTION ON FISHING LIMITS DENOUNCED:

The Government of the Faroe Islands announced that it could no longer be bound by the present fishing limits convention with the United Kingdom, as a change in the Icelandic limits might increase foreign fishing off the Faroe Islands. The Faroes reserve the right to renegotiate the agreement or, if that should fail, unilaterally to take the same action as Iceland. (United States Embassy dispatch, June 5, 1958, from London.)



Greece

FISHERIES SURVEY PLANNED:

A committee was recently formed by a decision of the Greek Government to carry out research and ascertain the up-to-date situation of the Greek fisheries

Greece (Contd.):

with regard to supplying the Greek population with sufficient quantities of fishery products at suitable prices. The committee consists of 7 members. (Aleia, November 1957.)

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SPONGE PRODUCTION IN 1957:

Greek sponge production in 1957 was below that in 1956.

Greek Sponge Production in Principal Producing Areas, 1956-57		
Regions	1957	1956
	(Metric Tons)	
Greek waters	41.0	47.0
Cyrenaica	25.6	29.0
Tripoli	28.2	31.8
Total	94.8	107.8

In 1957 the Greek production in Egyptian waters amounted to 7.5 metric tons. (Aleia, January 1958.)

Italy

FISHERY PRODUCTS IMPORTS INCREASED IN 1957:

Italy's fish imports reached an all-time high in 1957--128,060 metric tons against 121,881 tons in 1956. Most of this increase resulted from larger imports of fresh and frozen fish and salted cod, which together made up about 67 percent of total purchases from abroad.

Table 1 - Italian Fish Imports by Type		
	1957	1958
	(Metric Tons)	
Salted cod	46,250	43,696
Stockfish	7,843	8,440
Fresh and frozen fish	39,433	31,733
Herring, salted or smoked	2,668	4,232
Pilchards, salted	625	783
Anchovies and sardines, salted	4,361	2,990
Crustaceans and molluscs	3,591	2,803
Other fish, fresh, salted or smoked	82	119
Salmon, canned	702	1,326
Sardines and anchovies, canned	6,791	9,496
Tuna, canned	7 955	8,936
Other fish, canned	7,759	7,327
Total	128,060	121,881

Various types of canned fish made up most of the remainder, but these imports fell off by over 14 percent. This decrease can be attributed in part to larger imports of fresh and frozen fish, nearly half of which was used by local canneries.

The Italian fishing industry, assisted by a number of Government measures which provided loans and outright contributions, has made substantial progress in the past decade in constructing new fishing craft and in carrying out a program of modernization.

In spite of these improvements, the annual catch has increased very little during the past several years. In fact, landings in 1957 were down by 4.4 percent, totaling 186,724 tons as compared with 195,283 tons in 1956.

Additional funds have recently been allotted by the Italian Government for the further development of the fishing industry, part of which have been earmarked for research and study in the field of fisheries technology.

Salted cod accounted for over 36 percent of total purchases from abroad and, in the traditional pattern, led imports, followed closely by fresh and frozen fish. Italy's purchases from Canada were again confined almost entirely to salted cod and British Columbia canned salmon.

Table 2 - Italian Cod Imports by Country of Origin		
	1957	1956
	(Metric Tons)	
Canada	3,500	3,222
Denmark	8,066	6,247
France	6,735	11,296
Germany (Federal Republic)	4,467	4,050
Iceland	14,075	10,669
Norway	6,462	5,064
Other countries 1/	2,945	3,148
Total	46,250	43,696

1/Includes landings of Italian deep-sea trawlers.

Although Italians prefer fresh fish to all other types, salted cod is in strong demand because of its high protein content (due to partial removal of water during salting) and comparative low price. Wet-salted cod, which has been bled when caught and presents a white, attractive appearance, ranks first in popularity and is sold in all parts of Italy. There is, however, a strong demand in certain sections of the country for the hard-dried, light-salted cod produced on the coasts of Gaspe and Newfoundland. This type of cure is especially appreciated in inland areas where, apart from taste preferences, Canadian salted cod has been found to keep well despite the lack of adequate cold-storage facilities.

Italy (Contd.):

Fish similar to the Gaspe and Newfoundland cures cannot be obtained in worthwhile quantities from other exporting countries. However, imports of dried, heavy-salted French and Faroese cod are offering serious competition to the lower grades of Newfoundland shore cure.

Total imports of canned salmon showed a further decline in 1957, and purchases from Canada fell off by over 66 percent. Higher asking prices and a growing demand for less expensive types of canned fish were largely responsible for this decrease.

Italian Canned Salmon Imports		
	1957	1956
	(Metric Tons)	
Canada	357	1,064
Japan	327	243
Other countries	18	19
Total	702	1,326

Though imports of dried, salted, and smoked fish are free, fish in other categories, including canned varieties, remain on the list of restricted items for which import licenses must be obtained from the Italian authorities. It is highly probable that these restrictions will continue as long as sufficient supplies are available from other than dollar sources.

Because canned salmon cannot be obtained in volume except for payment in dollars, the Italian Government has during each of the past several years entered into a special arrangement with the Government of Canada for the purchase of British Columbia canned salmon. It is hoped by Canada that negotiations for a similar agreement this year will be successful, and that enough dollars will be forthcoming to cover Italy's requirements of this Canadian product.

Most of the salted fish entering Italy in 1957 was imported by two groups. The first of these groups is located at Naples and its purchases are confined to dried salted cod coming from Canada. The other group imports wet-salted fish, mainly from Iceland, Denmark, and Norway, and has its headquarters at Genoa. There are a few individual importers of both dried- and wet-salted cod, but the majority of the regular importers are members of one or both of these groups. A large proportion of the heavy-salted, dried cod from France is shipped overland directly to wholesalers in small lots. Both groups have their own selling organizations and sell directly to local wholesalers.

The marketing of salted cod has been orderly during the 1957/58 season, due largely to group buying and selling. The competition among individual importers, which often led to unnecessary price-cutting, has been eliminated and as a result prices on the local market have shown very little fluctuation.

Stocks of salted cod on hand at the end of 1957, though larger than those at the end of 1956, were not considered heavy, and imports since the beginning of 1958 have been kept to a minimum.

Sales over the winter months have been fairly satisfactory, mainly because bad weather has hampered local fishing operations. Demand is expected to slacken in the next few months, but currently there is no indication of a large carryover of Canadian salted cod into the new selling season, which begins in September.

Prospects for increased sales of canned salmon to Italy depend on lower prices, particularly in respect to chums which constitute the largest imports from Canada. Present prices are considered too high to allow a worthwhile turnover in sales, and the demand for canned salmon is being supplanted by requests for less expensive types of canned fish, particularly tuna. Today, canned salmon sales are largely limited to the luxury trade in the bigger cities, and there is every indication that this situation will continue unless prices are reduced. (Canada Foreign Trade, May 10, 1958.)

Japan

KING CRAB PRODUCTION AND EXPORTS ESTIMATED FOR 1958:

It is estimated that Japan's total king crab pack for 1958 will be 447,000 cases[1/] of which 377,000 cases will be from high-seas fishing (in the Okhotsk Sea and Bristol Bay) and 70,000 cases from domestic shore-based crab fishing operations. Crabs caught in the Okhotsk Sea will be processed on board four motherships and the Bristol Bay catch will be processed by one mothership. Crabs caught in waters near Japan will be processed by coastal canneries.

Since Japan's 1957 king crab pack figures have not yet been published, it is not possible to make a comparison with Japan's estimated total 1958 pack. It has been estimated, however, that the 1958 canned king crab meat pack will be slightly lower than the 1957 pack. Japan's high-seas crab fishing catch and pack will be lower than in 1957 by at least 24,400 cases, due to the new provisions contained in the recently-concluded Japan-Soviet Fisheries Agreement affecting Japan's crab fishing in the Okhotsk Sea.

Japan's four fleets operating in the Okhotsk Sea in 1957 packed 344,400 cases. In 1958 there will be the same number of fleets but each mothership will be permitted to pack a maximum of 80,000 cases, or a total of 320,000 cases for the four fleets. The canned king crab pack goal for 1957 was 320,000 cases, the same for 1958, but there was some flexibility in the 1957 agreement which permitted Japan to exceed that figure. The flexibility clause was eliminated for 1958.

Japan's 1958 king crab pack quota from operations in the Bristol Bay area has been set at 57,000 cases, the same as for the previous year. Also, as in the previous year, Japan will have one fleet operating in that area. It is estimated that Japan's king crab pack in the Bristol Bay area for 1958 will total 59,850 cases, the same as for 1957, or five percent above the set quota. The Japanese Fisheries Agency permits its crab fleet to pack a maximum of five percent in excess of the quota.

Shore-based king crab fishing and packing operations are estimated at about the same level as for 1957. Although 1957 pack figures are not available, Japanese industry plans indicate that about 70,000 cases will be canned by canneries in Japan. The actual pack figure will depend on the crab catch in waters near Japan where there is some indication of a decline in output. A decline in the king crab catch by about 25 percent between 1956 and 1957 is indicative of declining resources. The domestic shore-based crab catch in 1956 totaled 6,124 metric tons as compared with 4,605 metric tons in 1957.

There are no published government or industry plans that indicate the amount of canned king crab which will be exported during 1958. Based on announced individual company plans, however, it is estimated that 1958 exports will total between 385,000 and 410,000 cases. The lower exports indicate that Japan's crab-canning industry will attempt to meet domestic demand for canned crab of between 60,000 and 65,000 cases out of the 1958 pack. If Japan should export 410,000 cases in 1958, the crab-canning industry will be required to meet a part of this export quantity from domestically-held stocks. No published information on Japan's canned king crab stocks is available. Assuming that Japan will export 410,000 cases of canned king crab in 1958, it has been estimated that about 250,000 cases will be exported to the United States, 100,000 cases to the United Kingdom, and 60,000 cases to all other areas. If the total export goal should be reduced, it is considered most likely that the cut-back will be in exports to the United States.

Although some Japanese fisheries sources have indicated that Japan will be exporting increasing quantities of frozen king crab to the United States, officials of large fishing companies and of the Japanese Fisheries Agency have denied these reports, stating that Japanese industry plans to export frozen king crab are largely experimental in nature and that the high cost of freezing and preparing crab for export as well as strict United States sanitation requirements make export prospects doubtful. Only one fishing company has definite plans to export frozen king crab, and their plans for export do not exceed five tons. Two other companies hope to export small quantities on an experimental basis (dispatch from Tokyo, dated May 9, 1958).

1/ STANDARD CASES OF 48 6½-OZ. CANS.

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NORTH PACIFIC MOTHERSHIP SALMON FISHING:

The 15 Japanese North Pacific salmon fishing mothership fleets (432 catcher boats) operating in the Aleutian area in the North Pacific (the Bering Sea east of Kamchatka) as of May 31 had caught 11,259 metric tons of salmon as compared with 19,393 tons on the same date in 1957. As of May 20 the 15 fleets had caught 4,150 tons of salmon as compared with 11,499 tons a year earlier. These reports indicate that fishing is not up to the same level as it was in 1957 because of bad weather. The quota for these 15 fleets for 1958 is 85,667 tons as compared with 87,000 tons for 1957. The same number of mothership fleets in 1957 had 405 catcher boats fishing.

The 15 mothership fleets operating in the Aleutian area as of June 10 had caught 18,658 metric tons of salmon as compared with 30,954 tons on the same date in 1957. On June 12 they were reported fishing approximately in the area bound by 48°00' N.-54°36' N. and 163°00' E.-171°00' E.

As of June 20 only 5 days before the midpoint of the permitted fishing period, the fleets had caught 28,884 metric tons of salmon as compared with 47,930 tons on the same date in 1957--34 percent of the quota. Last year at the same time 55 percent of the quota had been caught. On June 23 the 15 fleets were reported fishing approximately in the area bound by 48°30' N.-52°30' N. and 160°00' E.-169°24' E.

The one fleet scheduled to operate in the Okhotsk area with a quota of 6,000 tons left for the fishing grounds on May 28.

The over-all quota for Japanese North Pacific salmon fishing for 1958 is 110,000 tons: 85,667 tons for the fleets fishing in the Aleutian area, 6,000 tons for the fleet fishing in the Okhotsk area, and 18,333 tons for the shore-based salmon fleets on Hokkaido Island. (Hokkai Suisan and Japan Fisheries News).

Japan (Contd.):

The one fleet (28 catcher boats) operating in the Okhotsk area caught 529 tons as of June 10 as compared to 1,094 tons for the same period last year with two motherships. The Okhotsk fleet was reported fishing on June 12 at 51°06' N.-153°36' E.

As of June 20 this fleet caught 1,643 tons as compared to 2,776 tons for the same period last year. This fleet was reported fishing on June 23 at 51°36' N.-153°12' E.

The termination date for these fleet operations under the Russo-Japanese fisheries treaty was scheduled as August 10, however, the year's agreement provides that salmon fishing was to cease July 20 east of Kamchatka north of 52° N. and west of 176°25' E. "in order to conserve red salmon."

Characteristics of this part of the 1958 season were said to be catches of pinks earlier than usual, rather good catches of reds, and a low proportion of chums in the catch.

Late in June the trade press began to express doubt that the fleets would attain their catch goal by the end of the fishing period. Although little has been made public on the species composition of the catch, it is reported that fishing is equally poor for all species. One fleet operating near Attu is quoted as reporting catching practically nothing but chums. Another press item reports that as of June 15 only about 4 million red salmon had been captured, and doubt is expressed that the catch quota of 11 million fish for this species can be attained this season.

The fish meal factoryship Ginyo Maru, proceeding to its fishing grounds in the Bering Sea, reported that on June 14-15, while passing from 48°30' N., 161°30' E. toward Attu, it passed 7 of the mothership fleets and found an eighth operating near Attu. The sea in this area was reported to be flat calm, with unusually low water temperatures and high transparency.

Republic of Korea

MARINE PRODUCTS YIELD INCREASED IN 1957:

The 1957 production of marine products by the Republic of Korea totaled 403,000 metric tons (including 6,000 tons of products derived from marine algae) to exceed that for 1956 by 13 percent. This was the largest catch attained since the end of World War II.

Fisheries development programs planned for 1958 will include the expenditure of US$325,000 of fiscal year 1957 International Cooperation Administration funds. The funds will be expended on the improvement of shrimp trawling, the tuna and shad fisheries, and also for processing facilities (including refrigeration and canning).

Mexico

CONCESSION FOR KELP HARVESTING GRANTED:

A 15-year concession has been granted to a Mexican subsidiary of a United States firm for the harvesting of kelp (Macrocystis pyrifera) along the west coast of Baja California. The company has been granted exclusive rights to harvest kelp in 12 specific zones covering an area of about 292 square miles between latitudes 30°28'10" and 32°15'35" N. The terms of the concession require that the firm establish a processing plant at Ensenada, employ vessels of Mexican registry and Mexican crews for harvesting the kelp.

The company will be obliged to supply the Mexican market with alginate products and invest a minimum of US$96,000 in plant and harvesting equipment. The contract concession was published in the Diario Oficial on June 12, 1958, states a dispatch from the United States Embassy in Mexico City.

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EXPORT DUTIES FOR NUMEROUS FISHERY ITEMS:

Mexican export duties on numerous fishery items and products were lowered in April 1958. The changes were reported in the Diario Oficial of April 1, 3, 10, 17, 18, and 21, 1958.

Mexico (Contd.):

New Mexican Export Duties For Fishery Items

Mexican Classification		New		Old	
Item number	Product	Specific & Ad valorem		Specific & Ad valorem	
		Peso/gross kilo	%	Peso/gross kilo	%
Effective April 18:					
040-00-04	Live frogs	0.20	15	0.20	26
040-00-05	Fresh-water turtles	-	10	0.02	15
040-00-06	Tortoise shell turtles	3	20	3	25
040-00-07	Sea turtles not for shell	-	10	0.02	15
041-00-01	Fresh abalone in chilled or frozen fillets	-	8	0.03	25
041-00-04	Fresh tuna, chilled or frozen	-	10	0.01	12
041-00-05	Fresh "bagre," chilled or frozen	-	10	0.01	12
041-00-06	Fresh barracuda, chilled or frozen	-	10	0.01	12
041-00-07	Fresh crab (barrilete), chilled or frozen	-	10	0.01	12
041-00-08	Fresh bonito, chilled or frozen	-	10	0.01	12
041-00-15	Fresh dogfish or shark (cazon), chilled or frozen	-	3	0.01	12
041-00-16	Fresh "curvina," chilled or frozen	-	10	0.01	12
041-00-18	Fresh red snapper, chilled or frozen	-	10	0.01	12
041-00-20	Fresh jack (jurel), chilled or frozen	-	10	0.01	12
041-00-23	Fresh "lisa," chilled or frozen	-	10	0.01	12
041-00-24	Fresh mackerel, chilled or frozen	-	10	0.01	12
041-00-26	Fresh mojarra, chilled or frozen	-	10	0.01	12
041-00-28	Fresh snapper or porgy (pargo), chilled or frozen	-	10	0.01	12
041-00-29	Fresh pompano, chilled or frozen	-	10	0.01	12
041-00-30	Fresh halibut, chilled or frozen	-	10	0.01	12
041-00-31	Fresh wahoo (peto), chilled or frozen	-	10	0.01	12
041-00-33	Fresh octopus, chilled or frozen	-	5	0.03	10
041-00-34	Fresh frogs, chilled or frozen	-	10	0.01	12
041-00-35	Fresh haddock or snook (robalo), chilled or frozen	-	10	0.01	12
041-00-36	Fresh tarpon or shad (sabalo), chilled or frozen	-	10	0.01	12
041-00-37	Fresh sardines, chilled or frozen	-	10	0.01	12
041-00-38	Fresh kingfish (sierra), chilled or frozen	-	10	0.01	12
042-00-00	Salted abalone	-	8	0.03	25
042-00-01	Shelled, salted clams	-	5	0.03	25

(Table continued on following page.)

Mexico (Contd.):

New Mexican Export Duties For Fishery Items (Contd.)

Mexican Classification		New		Old	
Item number	Product	Specific & Ad valorem		Specific & Ad valorem	
		Peso/gross kilo	%	Peso/gross kilo	%
Effective April 18:					
042-00-03	Shelled, salted oysters	-	5	0.03	25
042-00-04	Salted octopus	-	5	0.03	10
042-00-98	Crustaceans or mollusks, smoked, salted or dried, not elsewhere specified	-	10	0.03	30
Effective April 21:					
040-00-02	Live oysters in shell	-	20	0.01	30
040-00-03	Live fish for food	-	10	0.03	30
040-00-99	Live fresh water or marine animals not elsewhere specified	-	12	0.02	30
041-00-02	Fresh albacore, chilled or frozen	-	10	0.01	12
041-00-25	Fresh grouper or jewfish (mero), chilled or frozen	-	10	0.01	12
041-00-39	Fresh shark (tiburon), chilled or frozen	-	3	0.01	10
044-00-01	Fish entrails	-	15	-	25
280-00-00	Snail shells	-	3	-	25
280-00-04	Unworked coral	-	10	-	25
280-01-00	Natural or cleaned sponges	-	5	-	25
900-03-04	Fish for aquaria	-	10	0.03	30
900-99-98	Marine animals not for food not elsewhere specified	-	15	0.03	30
900-99-99	Live animals not for food, not elsewhere specified	-	15	-	25

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IMPORT DUTY ON FISHING VESSELS INCREASED:

On March 31, 1958, effective five days after publication, Mexico's Diario Oficial carried a decree (signed on February 17, 1958) increasing import duties on propeller-driven boats up to 35 meters (about 115 feet) in length. This decree will affect United States shipbuilders who have been supplying shrimp trawlers to Mexico. It is estimated that a 65-foot shrimp trawler, valued at US$45,000, will now be subject to an import duty of about US$17,350. Under the old rates the duty would have been about US$3,600.

For those boats en route prior to March 31, in order that they may enter under the old rates, a nonextendible period of 30 days was granted for the purpose of establishing proof that the boats sailed before the date of publication of the decree.

The new import duties are:

"Paragraph 756.01.00 - Propeller-driven boats, of whatever type, when they measure up to 35 meters in length" Per lineal meter of length - 1,000 pesos (US$80) plus 35 percent.

"Paragraph 756.01.01 - Propeller-driven boats, of whatever type, when they measure more than 35 meters. Per lineal meter of length - exempt plus 8 percent."

The transitory article states:

"The present decree shall enter into force 5 days after publication in the Diario Oficial of the Federation, and merchandise that is fully proven to the Direccion de Estudies Hacendarios de la Secretaria de Hacienda y Credito Publico, within a period of 30 days that cannot be extended, to have been embarked at sea before the date of publication, the previous quotas shall be applied, or those actually in force when they favor the importer."

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SHRIMP EXPORT DUTIES INCREASED:

Mexico increased export duties on fresh, iced, and frozen shrimp and equalized the export duties on shrimp for all of Mexico on June 3, 1958.

Export duties for frozen shrimp from the Gulf of Mexico, Salina Cruz, and Santa Rosalia were increased about US$5.88 a metric ton and frozen shrimp from the

Mexico (Contd.):

remainder of the Pacific Coast were increased about US$2.74 a ton.

Export duty increases on fresh or iced shrimp amounted to about US$125.76 a ton for the Gulf of Mexico, Salina Cruz, and Santa Rosalia and about US$103.76 a ton for the remainder of the Pacific.

Previously, the duties were less on fresh, iced, and frozen shrimp from the Gulf of Mexico and from Salina Cruz, Oaxaca, and Santa Rosalia, Baja California, on the Pacific than from elsewhere on the Pacific. Now export duties are the same for shrimp from anywhere in Mexico.

The new duty rates (including municipal tax) for frozen shrimp amount to about US$57.57 a ton (about US$0.026 a pound) and for fresh or iced shrimp to about US$486.15 a ton (about US$0.221 a pound).

It is estimated that the new duty will increase the revenue derived from exported shrimp by about US$80,000 a year and that total export revenue derived from shrimp will amout to about US$1,250,000 annually, according to a June 4, 1958, dispatch from the United States Embassy in Mexico City. Practically all--over 99 percent--of the Mexican fresh and frozen shrimp are exported to the United States. Only a very small percentage of the shrimp are exported in the fresh or iced form.

Netherlands

ANTARCTIC WHALE PRODUCTS PRODUCTION HIGHER FOR 1957/58 SEASON:

Antarctic production of whale and sperm oil by the Netherlands factoryship William Barendsz totaled 17,307 metric tons (103,841 barrels) of whale oil and 2,109 tons (12,656 barrels) of sperm oil during the season that ended early in 1958. Production this season of whale oil was up 18 percent over the 14,078 tons produced in 1956/57 and the sperm-oil production was almost double. Other byproducts from the 1957/58 catch included 2,277 tons of whale-meat meal and 15 tons of whale-liver oil, states a March 21, 1958, dispatch from United States Embassy at The Hague.

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HERRING INDUSTRY IN 1957:

In 1957 the supply of salted herring in the Netherlands amounted to 756,400 crans (about 134,496 metric tons), compared with 799,900 crans (142,230 tons) in 1956. On the other hand, exports of salted herring showed an increase--48,404 tons, valued at fl. 31 million US$8.2 million) in 1957, compared with 46,799 tons valued at fl.28.5 million (US$7.5 million) in 1956. Belgium was the largest buyer (11,392 tons), followed by Russia (10,000), East Germany (8,474), and West Germany (8,420).

In 1957 a total of 40,667 tons of fresh herring were marketed, compared with 41,960 tons in 1956. Of this quantity, 4,000 tons went to the fish-meal industry as compared with 1,900 tons in 1956. Fresh herring exports in 1957 reached 18,737 tons, valued at fl.8.2 million ($2.2 million), compared with 18,755 tons, valued at fl.8 million ($2.1 million) in 1956. Exports to West Germany amounted to 9,172 tons, to Belgium 5,590 tons, and to Czechoslovakia 1,539 tons. Exports of canned herring products decreased from 12,488 tons in 1956 to 11,262 tons in 1957. (Canada Foreign Trade, June 7, 1958.)

Note: Crans of salted herring converted to tons on basis of 1 cran equals 392 pounds. Values converted at rate of fl. 3.80 equals US$1.

New Guinea

DEVELOPMENT OF THE FISHING INDUSTRY:

New Guinea and Papua's annual imports of fish are valued at approximately £A275,000 (US$620,400), but it is hoped that eventually the Territory's entire fish requirements will be produced locally.

New Guinea (Contd.):

With this objective in mind, the fishing industry is steadily being developed, according to a plan adopted in 1956.

To implement this program, demonstrations of modern fishing gear are being given to Papuan fishermen to encourage them to use the latest techniques. In inland regions fresh-water fish, including tilapia, are being grown.

A new fisheries research vessel, the Tagula--designed in Scotland and built in Brisbane--is operating off the southern coast of Papua. The vessel is 60 feet long with a beam of 18 feet and a draft of 7 feet, and has accommodations for a master engineer, a technical staff of three, and a crew of ten. The main engine is 140 hp. Diesel, giving the vessel a cruising speed of 8½ knots with a fuel consumption of 5 gallons an hour. Cruising range is 1,200 miles. Navigation and fishing aids comprise a two-way radio, an echo-sounder with a viewing unit and a range up to 480 fathoms.

The vessel has a refrigeration installation with a capacity for freezing one ton of fish in 16 hours and a maximum capacity of 5 tons. There is an additional holding room, without refrigerated coils, with a storage capacity of five tons (South Pacific Commission, Quarterly Bulletin, April 1958).

The Tagula is demonstrating commercial fishing techniques in Coral Sea waters to encourage private enterprise to provide adequate fish supplies for the expanding populations of Port Moresby and other centers in Papua and New Guinea.

Norway

COD FISHERIES TRENDS AS OF MAY 31, 1958:

From January 1 to May 31, 1958, North Norway's total landings of young cod and spawning cod amounted to 124,340 metric tons as compared with 98,859 tons last year and 150,473 tons in 1956 for comparable periods. Of this year's landings, 74,640 tons were sold for drying, 30,918 tons for curing, and 18,782 tons for fresh purposes. (Fiskets Gang, June 3, 1958.)

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EXPORTS OF FISHERY PRODUCTS AND FISH MEAL TO U. S., 1957:

Norwegian exports of fishery products (not including fish meal) to the United States during 1957 were valued at US$10.5 million (75.1 million kroner) as compared with US$9.9 million (70.6 million kroner) during 1956. The over-all increase in exports of fish and fishery products to the United States, is the result of a 15-percent increase in the export of canned fish--largely sardines. Exports of frozen fillets and salt herring were both well below 1956 levels. Norwegian frozen fillet plants suffered from a lack of raw materials during most of 1957, reducing their export possibilities.

Norwegian exports of fish meal to the United States during 1957 were valued at US$0.5 million (3.7 million kroner) as compared with US$1.4 million (10.1 million kroner) during 1956. Herring meal exports to the United States continued the decline which has been evident since the record level reached in 1954. The decline in fish meal exports was partly caused by the poor herring season in 1957. The continual downward trend of exports to the United States, however, indicates that fish meal is encountering stiff price competition from other types of meal, particularly soybean meal, and from the increasing use of synthetic vitamin preparations. The long-range prospects for fish meal are not promising unless there is a change in the price relationship of the competing feeds. The poor herring catch in 1958 makes likely a continued decline in fish meal exports to the United States, states a March 24 dispatch from the United States Embassy in Oslo.

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FISHING AND WHALING INDUSTRIES, 1957:

Landings and Vessel Prices: Norway's fish catch in 1957 was 1,556,000 metric tons, about 22 percent below the 1,986,300 tons landed in 1956, and about 160,000

Norway (Contd.):

tons below the 5-year average for 1952-56. The total ex-vessel value was 611 million crowns (US$85.5 million), or a decline of 14 percent below 1956.

The unsatisfactory results from the fishing in 1957 were caused by (1) the reduction in the winter herring (down 30 percent to 795,600 tons) because of high winds during the fishing season, and (2) the poor availability of spawning cod for the Lofoten fisheries. Total cod production declined by about 21 percent to 241,300 tons, whereas the landings of all other fish remained stable at approximately 298,000 tons.

Ex-vessel prices were somewhat higher in 1957 than in 1956. Thus the average price paid for winter herring (large herring) and spring herring, increased from 20.18 crowns per hectoliter (about US$1.38 per 100 pounds) to 21.40 crowns per hectoliter (about $1.46 per 100 pounds, or by about 6 percent. The prices for fat herring rose from about 221 crowns (US$31) to 228 crowns (US$32) per ton (about 3 percent) and small herring prices increased from 169 crowns (US$24) to 177 crowns (US$25) per ton, or by about 5 percent. The guaranteed minimum ex-vessel prices for winter herring for the 1958 season were increased by 0.50 crown per hectoliter (about 3 U. S. cents per 100 pounds).

The minimum level for cod prices during the 1957 Lofoten fishing was the same as during the preceding year, 0.70 crown per kilogram (4.5 U. S. cents a pound). However, the small supply brought the actual average price paid up to about 0.76 crown per kilogram (5 U. S. cents a pound). The cod prices for 1958 were being negotiated in Oslo between representatives of the Government, the fishermen, and the fish processors, and exporters when this was written. The Price Equalization Fund for Fish, which previously has been supporting the cod prices, is now nearly exhausted as a result of declines in world market prices and higher operating costs.

The outlook for the fishing in 1958 is moderately optimistic. The expansion of the herring fishing fleet has continued, the shoals of winter herring under migration to the Norwegian coast were reported to be very large, and participation by fishermen was expected to increase. Optimistic forecasts have also come from scientific sources on the availability of cod for the Lofoten fisheries.

Canning: The fish canning industry increased its production sharply in 1957 because the brisling fisheries improved in 1957 over 1956. Exports increased and prices were favorable throughout the year. As in the past, the United States was the leading market for Norwegian canned fish, followed rather closely by the United Kingdom.

Whaling: The 1957 whaling season produced good results. Norway participated in the Antarctic whaling with nine expeditions, the same as the previous season. The catch was larger and Norwegian expeditions produced 1,004,000 barrels of whale and sperm oil or 152,000 barrels more than the previous season. The value of the catch rose by more than 20 percent to 298 million crowns (US$41.7 million), states an Economic Report (Part I, No. 58-22), a publication of the U. S. Department of Commerce, World Trade Information Service.

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FROZEN FISH FILLET SALES IN 1957:

Sales of Norwegian frozen fish fillets and fillet products reached approximately 20,000 metric tons in 1957. Of this, some 17,000 to 18,000 tons were exported; the main customers were the United States, the Soviet Union, Sweden, Czechoslovakia, Israel, and Holland. Norway has recently been successful in introducing frozen fillets on the Australian market. The distribution system has not yet been built up sufficiently to allow regular frozen fish exports to other markets.

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MARINE-OIL INDUSTRY:

Norwegian production of marine-animal oils dropped to 261,711 metric tons in 1957, a decrease of 5 percent from the previous year. This is the lowest production in many years. The 1958 production is now estimated to be about 27 percent below that of 1957.

Several controversial theories are advanced for the decline in production--one is the warming up of

Norway (Contd.):

the water causing fish to migrate to cooler water, and another is that Russian fishing may have depleted the fish catch normally available in these areas. It will be some time before the real reason for the reduced catch can be determined.

Whale and Sperm Oil--Antarctic: Norwegian whale-oil production for 1957 was about 25 percent larger than in 1956. However, the 1958 production is likely to drop to nearly the 1956 level. The 1957 output of sperm oil, on the other hand, decreased about 15 percent from the previous year but production is expected to be somewhat larger in 1958.

The International Association of Whaling Countries reports that Norway accounted for approxi-

Table 1 - Norway's Marine Oil Production

Product	1958 1/	1957	1956
		(Metric Tons)	
Fish Oil:			
Cod oil	20,000	7,900	9,200
Other fish liver	20,000	11,000	13,000
Herring	20,000	65,000	103,400
Seal Oil	5,000	4,700	5,000
Sperm Oil:			
Antarctic	20,587	19,222	22,568
Shore Stations	400	227	469
Whale Oil:			
Antarctic	123,420	152,893	121,898
Shore Stations	600	769	649
Total	190,007	261,711	276,184

1/Estimates.

mately 40 percent of the total whale-oil production for the 1958 season.

The Husvik Harbor station at South Georgia was not in operation in 1958; and at this time it is not known whether the station will be in operation during the next season.

Whale and Sperm Oil--Shore Stations: Only two shore stations were in operation in Norway during

Table 2 - Norway's Imports of Marine Oils, 1956-57

Product	1957	1956
	(Metric Tons)	
Crude:		
Whale oil	708	1,247
Sperm and bottlenose whale oil	1,527	874
Herring oil	13,269	8,241
Seal oil	-	80
Other Marine-Animal Oils:		
High potency (vitamin A)	1,070	1,935
Liver Oils:		
Cod	977	693
Veterinary fish	134	223
Industrial fish	746	388
Mixed fish	902	3,505
Residual fish	1,214	1,994
Total	20,547	19,180

the 1957 season and only two are expected to operate during the 1958 season.

Herring Oil: The 1957 herring season suffered from adverse weather conditions and the total catch was considerably reduced from previous years. Only about 65,000 tons of herring oil were produced.

The 1958 season was influenced by unpredictable behavior of the herring schools and by the re-

Table 3 - Norway's Exports of Marine Oils, 1956-57

Product and Country of Destination 1/	1957	1956
	(Metric Tons)	
Crude:		
Whale oil:		
Other countries	106,215	75,881
Sperm and bottlenose whale oil:		
Other countries	9,771	5,431
Herring oil:		
United States	19	286
Other countries	547	1,553
Seal oil:		
Other countries	5,136	4,712
Fish-liver oils:		
Cod (cold-cleared):		
United States	918	1,118
Other countries	3,524	4,552
Veterinary:		
United States	130	145
Other countries	4,035	5,328
Other:		
United States	281	751
Other countries	7,460	7,499
Marine animal oils, refined:		
Edible	2,100	3,307
Other	2,569	3,353
Marine-animal oils:		
Polymerized, oxidized, etc., edible	948	916
Hardened Fats:		
Edible	49,786	54,769
Technical use	10,157	22,903
Fatty acids from marine oils	4,900	5,168
Products from sperm and bottlenose whale oils	4,322	3,201
Other Products	1,395	1,508
Total	214,213	202,381

1/Some destinations not known.

latively adverse weather conditions. Consequently, the 1958 winter herring catch is the smallest recorded since 1944. The production of winter herring oil was only 20,000 tons, or equivalent to less than one-third of the 1957 catch.

Fish Liver Oils: Reduction in the volume of cod catches during 1957 reduced the fish-liver oil production for the year. However, the preliminary results for 1958 indicate a slight increase for this season over last year.

Seal Oil: Seal oil production remains relatively stable from year to year. Production data available are rather incomplete.

Imports: Total Norwegian imports of marine oils increased in 1957 over 1956 by about 1,400 tons. Because of the relatively low production of herring oil this season, it may be necessary to increase imports of crude herring oil from the United States. This item reached a rather sizable volume in 1957. Imports of herring oil from the United States in 1957 totaled 8,356 metric tons as compared to 1,405 tons in 1956.

Imports of animal fats and oils totaled 1,757 tons in 1957--30 percent below the previous year. The United States was the second largest exporter of "premier jus."

Norway (Contd.):

Table 4 - Norway's Whale-and Sperm-Oil Production, 1956/57

	Whale Oil	Sperm Oil	Total Oil
	(Metric Tons)		
Pelagic Production in Antarctic:			
1957/58 1/	123,455	20,593	144,047
1956/57 2/	145,148	18,991	164,140
1955/56	111,409	22,272	133,681
Husvik Harbor, South Georgia:			
1957/58 1/	-	-	-
1956/57 2/	7,788	236	8,024
1955/56	10,523	303	10,826
Shore Stations in Norway:			
1957	766	226	993
1956	649	496	1,145

1/ Preliminary.
2/ Revised.

Exports: Total exports of crude and processed marine oils increased about 6 percent in 1957.

Norway's pelagic Antarctic whale oil production, as usual, was sold through the Norwegian whaling companies' common marketing pool.

Prices obtained for the 1957 production varied greatly: about 10,000 long tons were sold at £91 (US$254.80) per ton, 62,000 long tons at £90 (US$252), 48,000 long tons at £85 (US$238), 18,000 long tons at £75 (US$210), and smaller lots at prices varying between £76 (US$212.80) and £82 10s. (US$230) per long ton. The average for the season was £85/17/6 (US$240.45) per long ton compared with £85/7/1 (US$239) during 1956. Based on the average 1957 price, the value of the 1957 whale oil production was estimated at 256 million kroner (US$36.3 million), compared with 206 million kroner (US$29.2 million) for the previous season. The total value of all whale oil, including sperm oil and byproducts, was 298 million kroner (US$42.3 million) in 1957 as against 245 million kroner (US$34.7 million) a year earlier.

Table 5 - Distribution of the Norwegian-Produced Antarctic Whale Oil

	1957	1956 1/
	(Long Tons)	
Norway	54,255	45,717
West Germany	23,589	28,563
United Kingdom	23,052	-
Sweden	1,763	5,071
Denmark	10,083	14,054
France	11,332	10,009
Netherlands	23,230	12,953
Belgium-Luxemburg	3,645	4,036
Total	151,447	120,403

1/ Revised.

Stocks: Total stocks of marine oils increased by approximately 5 percent in 1957.

Consumption: According to official statistics, consumption of whale and herring oil on crude basis declined from about 58,800 metric tons in 1956 to 57,500 tons in 1957.

Fish-Meal Industry, 1957: The total production of herring meal dropped from about 247,000 metric tons in 1956 to 165,000 tons in 1957.

Exports of fish meal dropped from 189,729 tons in 1956 to 134,667 tons in 1957--about 30 percent.

Table 6 - Norway's Stocks of Marine Oils, 1954, 1955, 1956 and 1957 as of December 31

	1957	1956
	(In Metric Tons)	
Crude herring oil and whale oil	71,764	67,981
Other marine oils	355	439
Total	72,019	68,410

The United Kingdom remained the most important market, taking about 24 percent of total exports, compared with 34 percent in 1956. Other markets for fish meal were West Germany, Netherlands, and France.

The average export price obtained for fish meal during 1957 improved slightly over 1956, from about 1,154 kroner (US$164) per ton in 1956 to 1,162 kroner (US$165) per ton in 1957.

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NEW OCEAN RESEARCH VESSEL "JOHAN HJORT"

The new ocean research vessel Johan Hjort was delivered in late March to the Norwegian Director of Fisheries, according to Fiskets Gang (April 3, 1958) and Fiskaren (March 26, 1958), Norwegian fishery periodicals. The vessel is built in accordance with the highest class in Det Norske Veritas and is equipped for voyages in all waters under the rules of the Norwegian Ship Control. The dimensions of the vessel are: over-all length 171.7 feet; length between perpendiculars 153.5 feet; breadth 30.5 feet; and depth 17.3 feet. The gross tonnage of the vessel is 697 tons. The crew consists of 32 men and in addition space is provided for 8 research workers.

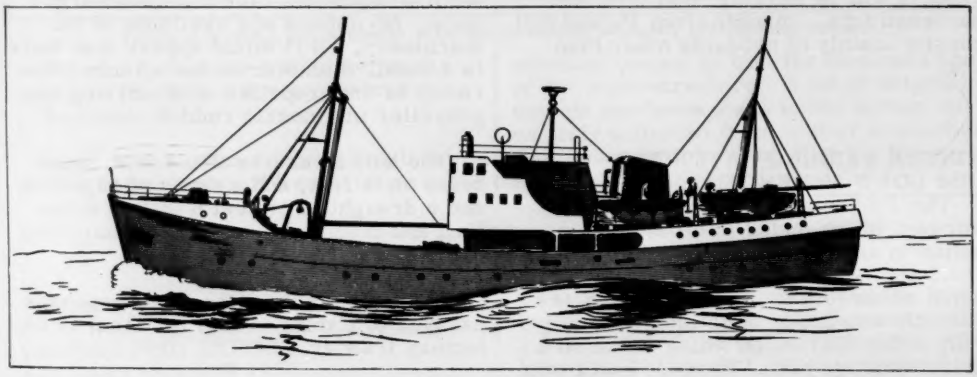
On the main deck in the aft deckhouse there is a mess for the officers, research staff, and crew, together with a large galley and adjoining food storage and cooler space, plus the engineer's quarters. Forward of the engineroom is a laboratory for the research staff. On the main deck forward there are storerooms for the master fisherman and a 2-man stateroom. In addition, there is a fish sampling room, a cooler for fish samples, a shower room, drying room, and various rooms for stores. Between decks forward there are four 2-man staterooms for the crew,

Norway (Contd.):

a large workroom, and 9 staterooms for officers and research staff, together with a gyroroom, drafting room, and darkroom. Between decks aft there are 9 staterooms for officers, crew, and a food-storage room. On the boat deck there are staterooms for the captain, the chief of the research staff, and the mate, together with a salon and a sick-room. On the bridge deck there is a pilothouse, boatroom, asdic room, radio room, and instrument room. All staterooms are white-enameled and have furniture of light mahogany or oak and are provided with hot and cold water. The furniture in the officers' staterooms is upholstered with woolen material, and the salon and elsewhere with imitation leather.

Each has a 110-kilowatt direct-current generator. A large motor drives the hydraulic pumps for the trawl winch. In addition to the usual central heating, the vessel is equipped with a warm-air ventilation system with fans forcing warm fresh air to all staterooms. The fresh-water equipment furnishes hot and cold water to all the staterooms. The boiler for central heating is oil-fired.

The vessel has the most modern navigation equipment available on the market--the latest model radar, direction finder, electric log, gyro compass, and 5 echo-sounder and asdic installations. The radio, telegraph, and telephone equipment is supplied with emergency sender and receiver. The steering equipment is electric hydraulic. The electrical installation is 220-volt direct current with



Norwegian research vessel John Hjort.

On the forward deck the vessel has two hatches, an unloading boom lifting 5 metric tons, a trawler winch with a tractive effort of 25 tons, two hydraulic hydrographic winches, and trawl gallows. On the forecastle deck there is a hydraulic anchor winch and on the boat deck a smaller hydraulic trawl winch.

The Johan Hjort is completely equipped with the most modern machinery. The main engine is a single-acting 4-cycle Diesel engine of 1,300 hp. at 275 r.p.m. equipped with fresh-water cooling in a closed system. The propeller is adjustable from the bridge. Between the main engine and the propeller there is a hydraulic oil coupling. There are two auxiliary 4-cycle Diesel motors of 335 and 165 hp., rated at 500 r.p.m. a transformer and coupling for land installations. The vessel has 10 loudspeakers posted in various places on the vessel, all of which are connected to a central point in the pilothouse. There is an automatic telephone exchange for 30 telephones with connections all over the vessel. The vessel's lifeboats are made of aluminum.

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SALES AND PRICES OF WHALE AND SPERM OIL, 1958:

Up to about April 1958, 50,000 tons of whale oil have been sold at £77/10/0 (about US$217) a long ton; no sperm oil has yet been sold. Assuming that the price holds for the remainder of the

Norway (Contd.):

whale oil and that an average price obtains for sperm oil, the value of this season's output will be substantially less than last season. The sales of whale oil from the 1956/57 production averaged close to US$238 per ton.

Note: 1. Values converted at rate of £1 equals US$2.80.
2. Also see Commercial Fisheries Review, June 1958, p. 57.

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TRADE AGREEMENT WITH POLAND INCLUDES FISHERY PRODUCTS:

Norway and Poland concluded a commodity exchange agreement on June 3, 1958, providing for trade valued at about 67 million kroner (US$9,380,000) in both directions during the period May 1, 1958-April 30, 1959. Included in Norwegian exports will be herring, fish oils, and hardened fats. Imports from Poland will consist mainly of products other than fish.

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WINTER HERRING CATCH FOR 1958 DOWN 50 PERCENT:

The 1958 winter herring season in Norway, which ended April 2, 1958, resulted in an approximate catch of only 758.5 million pounds (344,053 metric tons), according to preliminary figures recently released. This is only 43 percent of the 1957 catch which was also a below-average year. The poor catch was largely due to the irregular movements of the fish and to bad weather, which reduced the number of fishing days to 55 as compared with 69 in 1955-57.

Only 389.5 million pounds (176,676 tons) of herring were sold to the oil and meal factories in 1958, or less than one-third of the quantity delivered in 1957. Production of oil and meal was therefore reduced correspondingly. There is apparently a shortage of herring oil already, and one consumer has reportedly purchased whale oil as a substitute, states a May 23, 1958, dispatch from the United States Embassy in Oslo.

Poland

FACTORY TRAWLER WITH STERN CHUTE FOR NET:

A factoryship capable of fishing from the stern has been constructed by Poland. It is equipped with a stern trawl bridge. The fish are fed directly into the factory deck via a hatch immediately abaft the trawl bridge. This makes possible an elaborate superstructure, over two-thirds of the ship's length, curved forward, raked aft, and fitted with square windows, and looking like an excursion passenger ship.

The ship is Diesel-electrically propelled. Main generators are apparently arranged above and forward of the propelling motors geared to the shaft. The generators face forward and seem to be driven by medium-speed, four-cycle, airless-injection, blower supercharged units. No details are available of the machinery, but it would appear that there is a small-diameter motor attached directly to the propeller shaft driving the propeller in a nozzle rudder.

The hull measures 270.7 feet, has a beam of 41 feet, and a depth of 28.9 feet, and a draught of 15 feet 6 inches mean. Hull and machinery are to be completely standard.

The Poles believe the most economical type of fishing vessel for them is the factory trawler.

Their fishing fleet falls into three main groups--those fishing for herring to be salted; those fishing for herring and for mackerel to be frozen; and those fishing for whitefish. The vessel is described as having a "specialized superstructure" and processing plant to make it suitable for any of the three types of fishing mentioned.

The general plan, while not clear on various details, shows that a long superstructure is possible--one-and-a-half decks in height, above the main level.

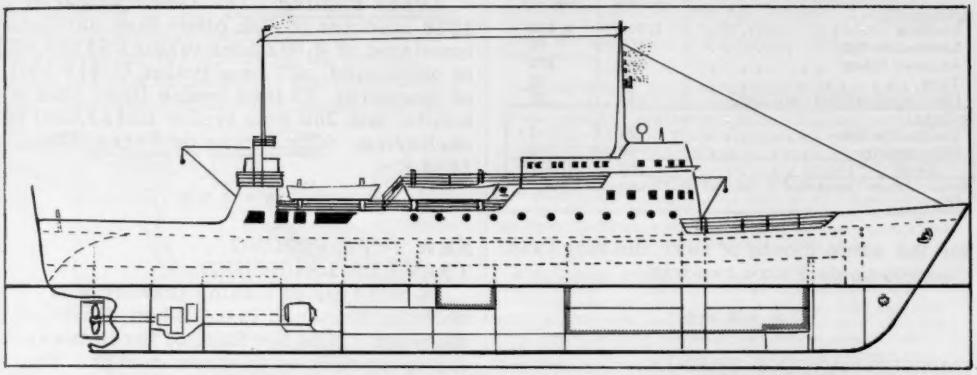
The machinery is aft. The deep-freeze hold forward has a capacity of 1,500 cubic meters (52,971 cubic feet) at -18° C. (0° F.).

Poland (Contd.):

The midship portion of the ship below the factory deck is taken up with stores, fuel oil, and a refrigerator engineroom. There are large tanks forward, and below the waterline in the forepeak there is a device described as a "bugruder."

Such a ship would be capable of long voyages. There is provision for an unusually large crew.

The foredeck is flush and open. A hatch leads down into the upper 'tween-deck, and another smaller hatch with an elevator comes up into the foreward end of the superstructure. A lot of original thought has been given to the layout, so entirely different from that of most other fish factoryships. (The Fishing News, August 23, 1957.)



Profile of the Polish factory trawler to be used for herring, mackerel, and white-fish fishing.

Portugal

CANNED FISH EXPORTS, JANUARY-MARCH 1958:

Portugal's exports of canned fish during January-March 1958 amounted to 12,006 metric tons (768,200 cases), valued at US$6.8 million, as compared with 10,841 tons, valued at US$6.9 million, for the same period in 1957. Sardines in olive oil exported during the first three months of 1958 amounted to 8,363 tons, valued at US$4.7 million.

Portuguese Canned Fish Exports

Species	Jan.-March 1958	
	Metric Tons	US$ 1,000
Sardines in olive oil	8,363	4,656
Sardinelike fish in olive oil	1,671	1,155
Sardine & sardinelike fish in brine	235	64
Tuna & tunalike fish in olive oil	267	214
Tuna & tunalike fish in brine	138	69
Mackerel in olive oil	1,170	552
Other fish	162	65
Total	12,006	6,775

During January-March 1958 the leading canned fish buyer was Germany with 1,972 tons (valued at US$1,120,000), followed by Italy with 1,469 tons (valued at US$791,000), the United States with 1,320 tons (valued at US$986,000), Great Britian with 1,261 tons (valued at US$677,000), and Belgium-Luxembourg with 892 tons (valued at US$469,000). Exports to the United States included 427 tons of sardines and 739 tons of anchovies. (Conservas de Peixe, May 1958.)

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CANNED FISH PACK, JANUARY 1958:

The total pack of canned fish of January 1958 amounted to 2,560 metric tons as compared with 2,652 tons for the same period in 1957. Canned sardines in oil (1,960 tons) accounted for 76.6 percent of the January 1958 total pack, higher by 11.1 percent than the pack of 1,764 tons

Portugal (Contd.):

Portuguese Canned Fish Pack, January 1958

Product	Net Weight	Canners' Value
	Metric Tons	US$ 1,000
In Olive Oil:		
Sardines	1,960	1,100
Sardinelike fish	197	89
Anchovy fillets	288	270
Tuna	37	32
Other species (incl. shellfish)	17	10
In Brine:		
Sardinelike fish	21	3
Other species	40	6
Total	2,560	1,510

Note: Values converted at rate of 28.75 escudos equals US$1.

for the same month of 1957, the May 1958 Conservas de Peixe reports.

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CANNED SARDINE TRENDS:

Activities of the Portuguese fisheries industry were seasonally at a low level during the winter months. Sardines landed in continental Portugal in 1957 reached a near-record total of 112,840 metric tons, compared with 99,830 metric tons in 1956, which was another excellent year.

While exports of canned sardines may reach a high level in 1958 in terms of quantity, the value of the pack may be affected by the sharp decline in prices for canned fish.

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FISHERIES TRENDS, JANUARY-MARCH 1958:

Sardine Fishing: During January 1958, the Portuguese fishing fleet landed 6,408 metric tons of sardines (valued at US$521,000 ex-vessel or $81.30 a ton). In January 1957, a total of 3,858 tons of sardines were landed (valued at US$680,000). Due to the closed season, no sardines were landed during February and March.

Canneries purchased 45.2 percent or 2,898 tons of the sardines (valued at US$276,000 ex-vessel or $95.24 a ton) during January. Only 54 tons were salted, and the balance of 3,456 tons, or 53.9 percent of the total was purchased for the fresh fish market.

Matosinhos lead all other ports in January landings of sardines with 5,072 tons or 79.2 percent, followed by Peniche 869 tons (13.6 percent), and Setubal 350 tons (5.5 percent).

Other Fishing: The January-March 1958 landings of fish other than sardines consisted of 4,983 tons (value US$283,000) of chinchard, 387 tons (value US$18,500) of mackerel, 23 tons (value US$4,139) of bonito, and 350 tons (value US$33,000) of anchovies. (Conservas de Peixe, May 1958.)

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NEW TYPE FISHING TRAWLER LAUNCHED:

A new type of fishing trawler was recently launched in a Lisbon, Portugal, shipyard. It is the first of three trawlers to be built in this new design. The vessel has an aluminum superstructure with a displacement of 725 tons, a capacity of 400 tons of fish, and a speed of 12 knots. In addition to the most modern navigation and safety equipment, the trawler has two stainless steel refrigeration holds, one of which is for rapid freezing and the other for storage. (Canadian Foreign Trade, May 24, 1958.)

Somalia

TUNA FISHERY AND INDUSTRY:

A recent report of a survey of the tuna industry in the Migiurtinia area of Somalia states that there are three tuna canneries in the area, located at the ports of Habo, Bosaso, and Candala; however, only the cannery at Candala is presently in operation.

The tuna fishing season in Somalia usually opens during the latter part of October and ends in May. At the end of March 1958, the cannery at Candala had processed 13,000 cases of tuna, and it was expected that by the end of the season, production would reach 16,000 cases--the largest pack since the cannery began operation.

The cannery at Candala, which has undergone many improvements, has a

Somalia (Contd.):

processing capacity of 50 tons of tuna per day; however, due to a lack of refrigerated storage facilities, the cannery is operated each day regardless of the quantity of fish caught. The canning firm is presently negotiating to install refrigeration for the 1958-59 season. If the plan is successful, the firm will start the tuna fishery one month earlier.

A shortage of bait caused the loss of 30 fishing days during the 1957/58 season. Refrigeration facilities would solve this problem since bait could be stored in times of abundance to be used in periods of scarcity. The cannery employs 180 canoes, with two fishermen to each canoe, and provides the fishermen with bait. At present, bait must be caught each morning, resulting in the loss of two hours of tuna fishing. Refrigeration would make it possible to distribute the bait early each morning and thus increase production considerably. Sardine bait, which is most plentiful in February, is of primary importance.

During an aerial survey of the waters from Alula to Point Ras Antara, on March 21, 1958, a total of 18 schools of fish were sighted, 4 of which were definitely identified as tuna. The schools were estimated to average about 5 to 7 tons. Most of the schools sighted were between Candala and Ras Antara--an area which seems to have vast and rich fishing potentials. Sardines were also sighted, but in quantities not sufficient to support a full-scale canning plant. (ICA Report 219, Mogadisco, May 22, 1958.)

Spain

VIGO FISHERIES TRENDS, APRIL 1958:

Fish Exchange: Landings at the Vigo Fish Exchange were 8.2 million pounds during April 1958, a drop of 1.2 million pounds from March, and about the same amount below April 1957. The landings were valued at US$929,763. This was a decrease of US$43,100 from the preceding month, but an increase of US$154,000 over April of 1957. The increased value this April was due to the sharp rise in fresh fish prices since last year, and to landings of the more expensive species.

Leading species sold over the Fish Exchange were small and large hake (1.8 million pounds), horse mackerel (1.3 million pounds), sardines (0.5 million pounds), and pomfret (0.4 million pounds). There was a severe drop in catches of pomfret, but sardine landings increased. Pomfret, usually a dependable species during this time of the year, decreased to about 0.4 million pounds from the March figure of 3.4 million pounds, and the April 1957 landings of 2.5 million pounds. Sardine landings increased 216 metric tons over the April 1957 figure of 22 tons. The sardine catches were all made after the season opened on April 15.

Fish Canning and Processing: Fish canners were primarily engaged in canning pomfret in April 1958. Like the fishermen, canners patiently waited for May and June when activity goes into full swing. During April 1958 canners bought over the Exchange 384 metric tons of fresh fish, only 63 more tons than in March, and 65 more tons than in April 1957. Fish bought for drying, smoking, salting, etc. totaled 220 tons, an increase of 139 tons from March, but a drop of 66 tons from April 1957, the United States Consul at Vigo reported on May 13, 1958.

Surinam

FISHING INDUSTRY, 1957:

On the whole, 1957 was a disappointing year for fish and shrimp production in Surinam, according to a dispatch (June 2, 1958) from the United States Embassy in Paramaribo. Production fell off for the first time since 1954, when an active program was begun by Surinam Government to develop local fishery resources. Official estimates set 1957 fishery production at 5.9 million pounds--down 19 percent from 1956. The major reason given for the decrease was the unusually long period of dry weather in 1957. The lack of normal rainfall tended to upset the saline balance of the coastal fishing waters and the leased fish-farming areas located on reclaimed coastal plantations.

Fish meal production in 1957 totaled 51 metric tons as compared with 36 tons in 1956. Production in the first three quarters showed a good increase over the prior year but the last quarter was only one third of the comparable 1956 period.

Surinam's imports of fishery products in 1957 were valued at Sf1.0 million

Surinam (Contd.):

(US$530,000) as compared with Sf800,000 (US$424,000) for 1956.

Shrimp production in 1957 amounted to 365 tons--down over 50 percent from the 1956 landings of 736 tons. The shrimp plant opened in 1956 was inoperative for most of the year due to supply problems. In 1957, the plant handled only 80 tons of shrimp (1956, 215 tons). Exports of shrimp in 1957 totaled 35 tons (1956, 72 tons). Ten percent of the frozen shrimp was sold locally. Forty-five percent of the catch was dried and sold in the local market, and prices were higher than in previous years.

Despite the bleak production picture, 1957 was not without its encouraging side. During the course of the year, the Government-financed survey of shrimp resources in offshore waters was completed. The survey report, verified by catches, indicated the presence offshore of commercial-size shrimp and sea trout. In view of the survey results, the Surinam Government has purchased a trawler and leased it to the operators of the shrimp plant. The Government also agreed early in 1958 to construct a pier and ice facilities at the plant. With this equipment, there is reason to feel that a commercially-feasible shrimp operation would be practical provided arrangements can be made for a few experienced trawlers to do the catching.

Experimental work in fish farming on the reclaimed diked areas, used in colonial times for agriculture, made progress during most of the year. Harvesting data obtained in July 1957 demonstrated that despite relatively high salinity, the ponds could produce large quantities of tilapia and snook.

Late in the year, there was an indication of interest by a United States firm in fish oil and fish meal prospects using fish found in Surinam's offshore waters.

The Fisheries Service, using funds from the Ten Year Plan continued its work on developing fisheries stations. Construction of a station at Nickerie, delayed by site acquisition problems, was planned for 1958 or 1959. A station at Coronie was carried in the 1959 work plan. Ten Year Plan funds were budgeted in 1958 to purchase a shrimp trawler and construct the pier and ice facilities at the shrimp plant in Paramaribo.

There were certain obvious problems other than rainfall which have to be faced in developing Surinam fishing resources. The major problems are: (1) Surinam fishermen are relatively few and they are part-time operators; (2) better equipment and more modern catching methods are required for any large production increase in ocean or estuarian fishing; and (3) improved organization of indigenous small-scale fishing operations. Fish farming using reclaimed plantation areas, when the operators are willing to work hard, has clearly proven profitable. The problem of the local shrimp plant, once the ice facilities and pier are completed, appears to be additional trawlers manned by experienced crews. There is little favorable prospect at present for the part-time local fishing group producing a sufficient supply of small shrimp (sea bob) to keep the factory at a satisfactory operating level.

Sweden

FISHERMEN'S EARNINGS ON WEST COAST VARY WITH VESSEL SIZE:

The economic adviser of the Swedish West Coast Fishermen's Central Association has made a survey of the earnings of Swedish fishermen outside of the official statistics, using such gauges as the horsepower capacity of the various craft or their insurance value, and basing the annual catch value on a combination of different seasons with a better or poorer yield.

His study shows that the financial return for each branch of fishing on the West Coast rises in proportion to the size of the fishing boat up to a certain point, whereupon it drops.

His investigations also reveal that the annual amount earned by fishermen in

Sweden (Contd.):

different localities on the West Coast fluctuates widely. In southern Bohuslän, for example, which is an area of high production, the figure may be 16,000 crowns (US$3,088), while a fisherman in the Halland district may show a relatively modest figure of 6,700 crowns (US$1,293) or less.

In seeking to determine how long it takes a West Coast fisherman to catch 100 crowns (US$19.30) worth of fish, the insured value of the boat was used as a gauge. On this basis the survey shows that small craft require 8 to 9 workdays. As the insured value rises, however, the number of days drops. For example a 20,000-crown (US$3,860) fishing boat needs five days, a 40,000-crown (US$7,720) boat 3.5 days, and the largest and most expensive boats 1.2 days.

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REVIEW OF THE FISHERIES, 1957:

Landings of fishery products at Swedish ports in 1957 amounted to 211,300 metric tons, according to preliminary statistics. This was a record amount and exceeded the 1956 landings by 20,000 tons and the 1955 landings by 2,000 tons. The previous record was established in 1955.

The total ex-vessel value of the catch in 1957 also exceeded previous years and amounted to 148.3 million crowns (US$28.7 million) as compared with 131.7 million crowns (US$25.5 million) in 1956 and 133.5 million crowns (US$25.8 million) in 1955. The relatively large increase in value during 1957 was due to increased landings of more expensive fish, such as salmon and eel.

The quantity of fish landed on the Swedish west coast amounted to 71 percent of the total landings as compared with 18 percent for the South Coast, and 11 percent for the East Coast. A noticeable change has taken place during the last 20 years--in 1947, 73 percent of the catch was landed on the West Coast, 13 percent on the South Coast, and 14 percent on the East Coast. In 1937, the percentage for the West Coast was 63, the South Coast 10, and the East Coast 27 percent.

The main reason for the significant decrease in the quantity landed on the East Coast is reduced catches of Baltic herring. In value, the decrease is not as significant, since the catch is made up of more expensive fish species.

A comparison of the total landings during 1937 and 1957, shows an increase in landings during this period of 100 percent, while the number of fishermen decreased by 25 percent.

The largest increase in value from 1937-1947 was made by the South Coast fisheries, which rose from 12 million crowns (US$2.3 million) in 1937 to 39 million crowns (US$7.5 million) in 1957. During the same period the quantity landed on the West Coast doubled, and now amounts to 150,000 tons.

Export of fish and fish products increased in 1957 to 76,500 tons as compared with 73,000 tons in 1956. The value of the fish and fish products exported during 1957 amounted to 58.6 million crowns (US$11.3 million).

Import of fish and fish products in 1957 amounted to 41,300 metric tons, as compared with 47,200 metric tons in 1956, a decrease of 5,900 metric tons.

The total value of the imported fish and fish products in 1957 amounted to 85 million crowns (US$16.4 million), resulting in an import surplus of 26.4 million crowns (US$5.1 million), which is 6.6 million crowns (US$1.3 million) less than in 1956, when the import surplus amounted to 33 million crowns (US$6.4 million).

The relatively large difference in the value of fish exported and imported is due to the export of low value fish and the import of more expensive fish, the United States Consul at Goteborg reports in a March 12, 1958, dispatch.

Turkey

SHRIMP FISHERY IN IZMIR DISTRICT:

Shrimp production in the Izmir district of Turkey is low, due to primitive catching methods, reports a United States consular dispatch from Izmir, dated May 21, 1958. According to the statements of fishermen, Foca, Cesme, and Aliaga are the best places to catch shrimp in the district. The southern part of the district, near Kusadasi, Fethiye, and Güllük, also has an abundance of shrimp, but production in these places is consumed locally due to transportation problems and a lack of refrigerated trucks. The shrimp season starts in early March and continues until June or July, but during some years shrimp may be caught in other months.

Most of the catching is done either by trawling or with manually-operated silk nets, in the grass and sands of the shallow coasts. For the purpose of increasing production, local fishermen draw attention to the necessity for taking steps to set up artificial shrimp ponds in available places along the shallow coasts of the Gulf of Izmir.

The bulk of the shrimp catch is handled by small firms or by the fishermen. Izmir fishermen sell most of their catches to retailers by bargaining and not at auction in the municipally-controlled fish market. The total average daily catch of shrimp brought to market in Izmir by the fishermen has been estimated at about 2,000 shrimp. Shrimp sales are made by piece and not by weight in Izmir, but local shrimp average about 16-18 to the pound heads on and about 27 to the pound heads off. Four or five years ago, shrimp prices were very low compared with this year, but now, due to an increase in consumption, wholesale prices range from 38 to 45 kurus (about 7-9 cents) for each shrimp.

After a thorough investigation of available statistics, it has not been possible to find any record of any exports of shrimp from Izmir or the smaller ports of this district. At present, the very small supply and the high prices rule out the Izmir district as a possible source of supply for United States importers. It also seems certain that a shrimp freezing plant is not feasible for Izmir and may be considered only in Iskenderun, where shrimp production is reportedly rather high and prices are lower.

Union of South Africa

SOUTH AND SOUTH-WEST AFRICA PILCHARD-MAASBANKER INDUSTRY, 1957:

The Union of South Africa and South-West African pilchard (sardine) and maasbanker (jack mackerel) landings during 1957 totaled 463,080 metric tons. South-West Africa accounted for 254,976 tons and the Union of South Africa Cape west coast for 208,104 tons.

Although the final figures for the canned fish pack are not yet available, the South-West Africa Walvis Bay fishery yielded 46,801 tons of fish meal and that of the Cape west coast 40,178 tons for a total of 86,979 tons. Fish-meal exports during the year from South-West Africa and the Union amounted to 57,224 tons.

The production of fish-body oil by the six Walvis Bay factories was 9,616 tons and that of the Union factories was 10,357 tons.

With fair catches on the Cape west coast during January and February 1958, South and South-West African fish meal exporters may have a good year on a strong market in 1958. (The South African Shipping News and Fishing Industry Review, April 1958.)

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PILCHARD-MAASBANKER INDUSTRY, JANUARY-FEBRUARY 1958:

February was a good month for the pilchard-maasbanker fishermen of the Union of South Africa fishing off the Cape west coast. Returns released by the Division of Fisheries show that 25,093 metric tons of pilchards, 1,309 tons maasbanker, and 13,768 tons mackerel were caught. These figures compare with 17,965 tons pilchards, 4,363 tons maasbanker, and 1,197 tons mackerel in February 1957; and 7,212 tons pilchards and 593 tons maasbanker in February 1956.

The total quota fish catch in February (pilchards and maasbanker) was 26,402 tons and the total for the first two months of the present season was 34,242 tons.

The February 1958 catch yielded 6,979 tons fish meal, 287,989 gallons fish-body oil, 619,866 pounds canned pilchards, 58,422 pounds canned maasbanker, and 2,711,718 pounds mackerel.

Reports during March indicated a drop from the February total although there were periods of good fishing.

The pilchard-maasbanker fishing season got off to a reasonable start during January when 7,690 tons of pilchards, 150 tons of maasbanker, and 3,142 tons of mackerel were landed in South-West Africa and the Union of South Africa. These figures compare with: 4,551 tons pilchards, 605 tons maasbanker, and 3,267 tons mackerel in January 1957; and 4,730 tons pilchards and 23 tons maasbanker in January 1956.

The January catch this year yielded 2,018 tons fish meal, 62,757 gallons fish-body oil, 322,896 pounds canned pilchards, and 275,390 pounds canned mackerel.

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Union of South Africa (Contd.):

TRAWLER FISHERY LANDS RECORD CATCH IN 1957:

The development of South African and export markets for fresh and frozen fish, the opening of new depots in inland areas, further improvements in the distribution system, and the steady replacement of the old trawlers by larger new vessels enabled the Union's trawling industry to reach a new record catch of 160 million pounds in 1957. This was more than 8 million pounds above the previous record in 1956 of 152 million pounds and is moving towards a threefold increase over the 60 million pounds of trawled fish landed ten years ago.

As in previous years, the bulk of the catch was made up of hake, which last year totaled 133 million pounds, compared with 125 million pounds in 1956. Other important fish species in the 1957 total were: kingklip, 2.4 million pounds; sole, 2.5 million pounds; kabeljou, 2.4 million pounds; pangas, 6.9 million pounds; and maasbanker, 2.2 million million pounds. (The South African Shipping News and Fishing Industry Review, March 1958.)

U. S. S. R.

FISHERIES PROGRAMS EXTENSIVE FAO BIOLOGIST REPORTS:

The vast extent of Russian programs and work in fisheries was commented on recently at the Rome headquarters of the Food and Agriculture Organization (FAO), by the Chief of the Biology Branch, Fisheries Division, FAO, on his return from Moscow.

"The Russians have about 50 groups, employing thousands of people, working on fisheries research," he stated. "The staff of the All Union Institute of Research in Marine Fisheries and Oceanography alone amounts to 500 persons."

As a result of this widesparead activity, the Russians are "accumulating vast amounts of material."

"My impression was that this extensive work in fisheries research is well coordinated even though it involves many institutions and scientific bodies," the Chief of the Biology Branch said.

While in Moscow, where he attended a meeting of the International Advisory Committee on Research in the Natural Sciences Program of UNESCO, the Chief of the Biology Branch conferred with a number of Russian officials and scientists. One result of his visit is that the Russians have promised to supply FAO with a monthly annotated list of U. S. S. R. fisheries literature. They have also promised to collaborate in the preparation of a manual on institutions, research organizations, and scientific bodies engaged in fisheries work in Russia.

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SPONGE RUBBER FENDERS FOR VESSELS LOADING AT SEA:

At the ninth meeting (1957) of the International Whaling Commission the Russian Commissioner submitted a description of the manufacture of porous rubber fenders intended to obviate the use of whales as fenders when whaling vessels are loading or unloading at sea.

The sponge rubber fender is intended to prevent damage to the sides of whalers and tankers during loading operations on the open sea in the Antarctic.

"The fender is made in the following way:

"In the first place a ship's mat is woven on a loom from manila rope yarn. The mat is sewn into a cylindrical bag 9'2" high and 5 feet $9\frac{1}{2}$ inches in diameter. When completed, the bag is hung on brackets and stuffed with sponge rubber with a ram. The bag is then sewn up.

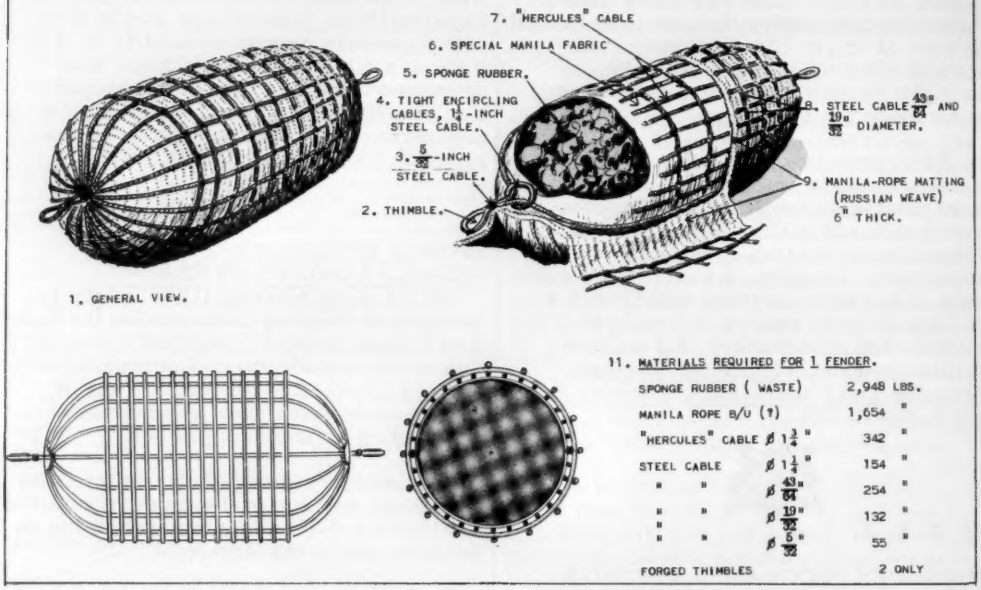
"Two grommets $9\frac{7}{8}$ inches in diameter are made from a strand of $1\frac{1}{4}$-inch 'Hercules' cable. The grommets are fitted to the ends of the bag. One strand of 'Hercules' cable is rove through one of the grommets and is then snaked from one grommet to the other round the entire fender. The 'Hercules' strand is strained with a 'handy-Billy.' This insures that the cable will be sufficiently tight on

U. S. S. R. (Contd.):

the bag. The longitudinal 'Hercules' strands are intersected by similar strands round the entire fender every $15\frac{3}{4}$ inches. After this, an eye made of a $\frac{5}{16}$-inch strand of $1\frac{1}{4}$-inch cable is fitted to the fender. Forged thimbles are fitted against the 'Hercules' grommets into the eye, and are secured by a double lashing of $\frac{5}{32}$-inch cable. The fender is covered with strands of manila rope woven by the Russian method. This matting is made from strands of 75 yarns each. A network of steel cable is worked on to the manila matting. Two grommets $9\frac{7}{8}$ inches in diameter are made from the cable and these are slipped over the eyes (with the thimbles) and are made fast to the manila matting. A steel cable $\frac{43}{64}$-inch in diameter is rove through one of the grommets and is strained by means of a 'handy-Billy' from one grommet to the other round the entire fender at intervals of $7\frac{7}{8}$ inches. Transverse turns of cable $\frac{19}{32}$-inch in diameter are run round the fender at right-angles to the longitudinal ribs of cable and at intervals of $7\frac{7}{8}$ inches. The strands of the transverse cable are opened where they intersect the longitudinal ribs.

In order to fix the fender over the side of the vessel, mooring ends of a 1-inch steel cable 82 feet long are made fast to its eyes. In order to lower it overboard and to lift it on to the deck, a strop of cable $\frac{11}{16}$-inch in diameter and $19\frac{1}{2}$ feet long is passed through the eyes. The fenders are fastened in a horizonal position on the cylindrical part of the whaling ship. Some of the fenders are let down into the water and float freely at the paid-out hawser end, Others are suspended high above the waterline where the waves cannot reach them.

PLIANT SPONGE-RUBBER FENDER


7. "HERCULES" CABLE
6. SPECIAL MANILA FABRIC
5. SPONGE RUBBER.
4. TIGHT ENCIRCLING CABLES, $1\frac{1}{4}$-INCH STEEL CABLE.
3. $\frac{5}{32}$-INCH STEEL CABLE.
2. THIMBLE.
8. STEEL CABLE $\frac{43}{64}$" AND $\frac{19}{32}$" DIAMETER.
9. MANILA-ROPE MATTING (RUSSIAN WEAVE) 6" THICK.
1. GENERAL VIEW.

11. MATERIALS REQUIRED FOR 1 FENDER.

SPONGE RUBBER (WASTE)		2,948 LBS.
MANILA ROPE B/U (?)		1,654 "
"HERCULES" CABLE	Ø $1\frac{3}{4}$"	342 "
STEEL CABLE	Ø $1\frac{1}{4}$"	154 "
" "	Ø $\frac{43}{64}$"	254 "
" "	Ø $\frac{19}{32}$"	132 "
" "	Ø $\frac{5}{32}$"	55 "
FORGED THIMBLES		2 ONLY

United Kingdom

FISHING INDUSTRY URGES GOVERNMENT TO CONDUCT TRAWL EFFICIENCY STUDIES:

A large British fishery firm has been conducting experiments for some time to

United Kingdom (Contd.):

try to improve the efficiency of trawls and have now sought the help of the Government and the White Fish Authority (W.F.A.) in the research in the same way as they participated in the fish-freezing-at-sea experiments with the Grimsby trawler Northern Wave.

Hull and Fleetwood trawler owners are also keenly interested in the project, which is being considered by the British Trawlers' Federation.

In view of the possibility which faces the fishing industry of an extension of fishing limits which would bar British trawlers from many thousands of square miles of open sea in which they now catch a considerable proportion of the deep-water fish landed in Great Britain, any improvement in the efficiency factor of trawls is obviously of primary importance to the whole fishing industry. It is thought that the present net could have its fishing powers increased by as much as 15 percent.

The general principle of the trawl has not altered materially in the past half a century and the basic principles have not changed greatly since trawls were invented many centuries ago.

The large fishery firm together with another fishery firm have been studying trawl efficiency for some time and are prepared to spend quite a lot of money on it, but the cost of a thorough study and exhaustive experiments is obviously far more than any one company can possibly bear, and so outside aid is being sought from the Government and the rest of the fishing industry, the whole of which will benefit from any new discoveries or developments.

The first job to be undertaken by the scientists is to test thoroughly the present trawl in Arctic waters. Little is yet known from a scientific point of view of the behavior of a trawler's net under water, and for the scientists to tackle the job they will first have to obtain complete data of stresses and strains. Only when they have obtained this preliminary accurate information, collected in the vital Arctic waters, will they be able to turn to experiments.

While the primary objective is the improvement of the catching efficiency of the trawl, no less important is that of devising a net and gear which will tow at a faster speed. At present this is between 3 and 4 knots and it is obvious that if this can be increased materially with the same or a higher efficiency, trawlers will have to spend less time on the fishing grounds, will be able to make quicker trips, and land their fish in even better condition than at present. Last, but by no means least, operating costs would be reduced.

It is understood that the aid sought from the W.F.A. and the Government for help to carry out this investigation will be forthcoming. (Fish Trades Gazette, May 31, 1958.)

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FREEZE-DRYING FOODS TRIED COMMERCIALLY:

An Aberdeen (Scotland) firm preserves fish steaks (and chips, fruit, and vegetables) by a method which combines freezing with dehydration. Layers of fish steaks of uniform thickness are frozen under pressure in trays in a plate freezer. The trays are then placed in a vacuum drier where they are compressed by hydraulic mechanism. A batch of 700 pounds of wet fish can be freeze-dried in about 6 hours to a final moisture content of only 5 percent. Freeze-dried foods packed in cans, can be stored in the tropics without refrigeration for up to 6 months without loss of quality. They are reconstituted by soaking in water for a short time and, it is claimed, retain their original flavor, consistency, and food value. (Australian Fisheries Newsletter, May 1958.)

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FRIED FISH SHOPS USE PORTION-PACK FISH FILLETS:

In Britain the fried fish trade is being supplied with raw frozen portion-pack cod fillets of uniform size and weight which are ready for breading, battering, and frying without defrosting. The fish fillets are obtained by an adaptation of the fish stick process. The skinned and boned fillets are cut into portions of exactly 4 oz. each and the fish frier receives cod fillets which he

United Kingdom (Contd.):

can store in his freezer or fry immediately after breading and battering (Fish Trade Gazette, May 25, 1957).

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PROPOSED ICELANDIC DECREE ON 12-MILE FISHING LIMITS REJECTED:
The British Government issued a declaration on June 3 rejecting as without legal effect the Icelandic decree expected to be issued on June 30, states a June 5, 1958, United States Embassy dispatch from London. This decree, according to the British statement, would claim extension of Icelandic fishing limits to 12 miles as of September 1, 1958; it would seek to subject fishing within the new limits to Icelandic control, and to reserve the right to alter the base lines from which the Icelandic fishery limits are at present measured.

Although the British Government is aware of the importance of fisheries to Iceland, the declaration says that "fisheries are also of great importance to the United Kingdom." Asserting that it would be the duty of the British Government "to prevent any unlawful attempt to interfere with British fishing vessels on the high seas," the declaration states that the British Government was and is prepared to negotiate an acceptable fisheries agreement. It expresses the hope "that the Icelandic Government will agree that negotiation is in every respect preferable to unilateral action, and that the period before September 1 should be used to negotiate a lasting solution acceptable to all concerned."

An editorial in the Manchester Guardian stated on June 3 that "If Iceland declines to admit any existing rights within 12 miles . . . other governments and fishing industries may have to apply such sanction as they can" which would include refusal to allow Icelandic fish to land in England. The editorial concluded with the hope that such measures of economic warfare can be averted by good sense on both sides. The Financial Times on the same day alluded also to naval protection of British trawlers as a theoretic possibility, but concluded that "a series of light naval engagements to determine territorial waters is not a prospect which can readily be contemplated."

British trawler fishermen at Grimsby were reported to have welcomed the news that the British Government will provide protection for fishing vessels operating within the Iceland 12-mile limit, although it was noted that the nature of this protective action remained to be seen.

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STUDIES ON BOXING FISH AT SEA:
Ways are continually being sought for improving the techniques of storing fish aboard trawlers at sea. Studies of the effect of boxing on the quality of fish taken from distant waters have been initiated. In addition, a theoretical study has been made to learn the limitations in the design of boxes and supports as related to the space in the hold of a trawler. If boxes are used to replace shelves, more hold space will be required aboard the trawler.

Effect of Fish Gills on Keeping Quality: Fish with gills intact usually develop stronger and more readily discernible odors in the raw state than fish from which the gills have been removed at the time of evisceration. Differences in the quality of the cooked fish prepared from gilled and from ungilled eviscerated fish, however, could not be detected.

Effect of Clean Boxes: Previous findings have shown that the bacterial load of the ice used in icing fish has considerable influence on the keeping quality of the iced fish. Clean boxes also are of importance in retaining quality. To study the problem, the investigators carefully eviscerated washed codling and packed them in new wooden boxes and in used wooden boxes. The used or dirty boxes had a bacterial load of 10,000 to 1,000,000 times the bacterial load of the new or clean boxes. Clean ice was used throughout this study. According to the results, which have not been fully analyzed, the effect of the cleanliness of the fish box on keeping quality is of the same order of magnitude as the effect of the cleanliness of the ice.

Fish that had been iced in clean boxes usually were organoleptically superior to fish that had been iced in dirty boxes, particularly from the standpoint of appearance of the meat of the raw fish. After both lots of iced and boxed fish had been in storage for 12 days, fish iced in clean boxes were about 1 to 3 days fresher organoleptically than fish that had been iced in dirty boxes. After 16 days of storage in ice, however, these differences were less obvious. Fish that had been washed before they were boxed in ice showed some improvement in the retention of quality but this fact was not as apparent as the effect of cleanliness of the box.

Methods for Cleaning Boxes: The Humber Laboratory at present is engaged in a study of the efficiency of commercial detergents and sanitizers for use in the fishing industry. The cleaning and the sterilizing of wooden surfaces present a particularly difficult problem to the fishing industry.

Properties of Commercial Ice: Representatives of the fishing industry have requested that a study be made to determine if there is a basis for a belief that manufactured ice from various sources varies in efficiency during use. Rates of melting of the various ices will be determined. The rate of the melting of ice under practical conditions probably is subject to considerable variation that depends (1) on differences in air temperature, (2) on the drafts to which the ice is exposed, and (3) on the pattern of melting. Melting patterns involved in the formation of crevasses and ice bridges will be studied. Experiments to date have shown that wide variations in particle size distribution have very little effect on the rate of melting (Report of Great Britain's Food Investigation Board for 1956).

Yugoslavia

MARINE FISHING INDUSTRY, 1957:
In 1957 the Yugoslav sea fishermen landed 20,100 metric tons of fish, an increase of nearly 2,000 metric tons over 1956 when 18,270 tons were landed.

In 1957, a total of 6,400 metric tons of fish were canned; 2,900 metric tons of fish were salted; and 1,000 metric tons of fish were manufactured into fish meal; the balance was sold fresh.

The 1957 landings in the most important fishing ports were as follows: Split 3,700 metric tons; Pula 2,900 tons; Zadar 2,500 tons; Koper 2,400 tons; Rijeka area 4,900 tons.

The fleet was increased by the purchase of 12 new fishing boats, and 15 units were re-equipped (Commercial News of Yugoslavia, vol. IV, no. 4, 1958).

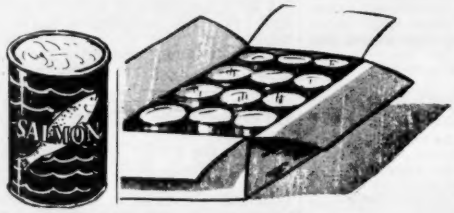
FEDERAL ACTIONS

Federal Trade Commission

PRIMARY BROKER OF CANNED SALMON CHARGED WITH ILLEGAL BROKERAGE PAYMENTS:

A Seattle, Wash., primary broker of canned salmon and other seafoods was charged on June 16, 1958, by the Federal Trade Commission with granting illegal brokerage to some of its customers.

According to a Commission complaint (7151, Seafood Products), the brokerage



firm generally sells canned salmon through hired field brokers and its customary 5-percent brokerage fee usually is split with the field broker handling a sale.

The firm, which is a partnership, is charged with granting certain buyers substantial allowances in lieu of brokerage in violation of Sec. 2(c) of the Robinson-Patman Amendment to the Clayton Act.

These illegal grants, the complaint alleges, are made by giving favored buyers price differentials or concessions and rebates and allowances, which are not charged back to the packer-principals but taken from the brokerage earnings of the firm and its field brokers.

The complaint cites these typical methods used by the firm in making the unlawful payments: (1) selling at net prices lower than those accounted for to the packers; (2) granting price deductions, a part or all of which are not charged back to the packers; (3) taking reduced brokerage on sales involving price concessions.

The parties are granted 30 days in which to file answer to the complaint. A hearing was scheduled for July 28 in Seattle, Wash., before a Commission hearing examiner.

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PRIMARY SEAFOOD BROKER CHARGED WITH PAYMENT OF ILLEGAL BROKERAGE:

A Seattle, Wash., primary broker of canned salmon and other seafood was charged (Complaint 7154, Seafood) on June 23, 1958, by the Federal Trade Commission with making illegal brokerage payments to favored customers.

The firm and its president, the complaint alleges, have granted certain buyers rebates in lieu of brokerage or price concessions reflecting it, in violation of Sec. 2(c) of the amended Clayton Act,

According to the complaint, in some transactions the firm absorbs the unlawful rebates from its customary 5-percent brokerage fee, and in others it shares the payments with the field broker involved out of the $2\frac{1}{2}$-percent commission each receives.

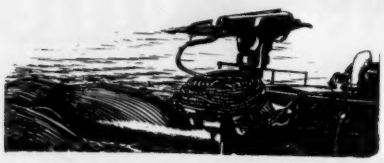
For example, the complaint says, the respondents sell at net prices lower than those accounted for to their packer principals; grant price deductions, wholly or partly not charged back to the packers; and take reduced brokerage on sales involving price concessions.

The parties were granted 30 days in which to file answer to the complaint. A hearing was scheduled for July 28 in Seattle, Wash., before a Commission hearing examiner.

Department of the Interior

WHALING REGULATIONS:

The whaling regulations, applicable to nationals and whaling enterprises of the



United States, were amended and republished in the May 8 Federal Register.

Section 13 of the Whaling Convention Act of 1949, the legislation implementing the International Convention for the Regulation of Whaling signed at Washington December 2, 1946, by the United States and certain other governments, provides that regulations of the International Whaling Commission shall be submitted for publication in the Federal Register by the Secretary of Interior. The regulations as published are the same as those issued by the Commission except that certain editorial changes have been made to conform to the required presentation of regulations in the Federal Register. The regulations as published follow:

TITLE 50—WILDLIFE

Chapter III—International Regulatory Agencies (Fishing and Whaling)

Subchapter B—International Whaling Commission

PART 351—WHALING

Basis and purpose. Section 13 of the Whaling Convention Act of 1949 (64 Stat. 421, 425; 16 U. S. C., 1952 ed., 916k), the legislation implementing the International Convention for the Regulation of Whaling signed at Washington December 2, 1946, by the United States of America and certain other Governments, provides that regulations of the International Whaling Commission shall be submitted for publication in the FEDERAL REGISTER by the Secretary of the Interior. Regulations of the Commission are defined to mean the whaling regulations in the schedule annexed to and constituting a part of the Convention in their original form or as modified, revised, or amended by the Commission. The provisions of the whaling regulations, as originally embodied in the schedule annexed to the Convention, have been amended several times by the International Whaling Commission, the last amendments having been made in October 1957. The whaling regulations, as last amended in October 1957, have been edited to conform the numbering, internal references, and similar items to regulations of the Administrative Committee of the Federal Register but no changes have been made in the substantive provisions. The provisions of these regulations are applicable to nationals and whaling enterprises of the United States.

Amendments to the whaling regulations are adopted by the International Whaling Commission pursuant to Article V of the Convention without regard to the notice and public procedure requirements of the Administrative Procedure Act (5 U. S. C. 1001). Accordingly, in fulfillment of the duty imposed upon the Secretary of the Interior by section 13 of the Whaling Convention Act of 1949, the whaling regulations published as Part 351, Title 50, Code of Federal Regulations, as the same appeared in 22 F. R. 1721, March 16, 1957, are amended and republished to read as hereinafter set forth.

ROSS LEFFLER,
Assistant Secretary of the Interior.

MAY 2, 1958.

Sec.

351.1 Inspection.
351.2 Killing of gray or right whales prohibited.
351.3 Killing of calves or suckling whales prohibited.
351.4 Operation of factory ships limited.
351.5 Closed area for factory ships in Antarctic.
351.6 Limitations on the taking of humpback whales.
351.7 Closed seasons for pelagic whaling for baleen and sperm whales.
351.8 Catch quota for baleen whales.
351.9 Minimum size limits.
351.10 Closed seasons for land stations.
351.11 Use of factory ships in waters other than south of 40° South Latitude.
351.12 Limitations on processing of whales.
351.13 Prompt processing required.
351.14 Remuneration of employees.
351.15 Submission of laws and regulations.
351.16 Submission of statistical data.
351.17 Factory ship operations within territorial waters.
351.18 Definitions.

AUTHORITY: §§ 351.1 to 351.18 issued under Art. V, 62 Stat. 1718. Interpret or apply secs. 2–14, 64 Stat. 421–425; 16 U. S. C. 916–916l.

§ 351.1 *Inspection.* (a) There shall be maintained on each factory ship at least two inspectors of whaling for the purpose of maintaining twenty-four hour inspection. These inspectors shall be appointed and paid by the Government having jurisdiction over the factory ship.

(b) Adequate inspection shall be maintained at each land station. The inspectors serving at each land station shall be appointed and paid by the Government having jurisdiction over the land station.

§ 351.2 *Killing of gray or right whales prohibited.* It is forbidden to take or kill gray whales or right whales, except when the meat and products of such whales are to be used exclusively for local consumption by the aborigines.

§ 351.3 *Killing of calves or suckling whales prohibited.* It is forbidden to take or kill calves or suckling whales or female whales which are accompanied by calves or suckling whales.

§ 351.4 *Operation of factory ships limited.* (a) It is forbidden to kill or attempt to kill blue whales in the North Atlantic Ocean for a period of five years.[1]

(b) It is forbidden to use a whale catcher attached to a factory ship for the purpose of killing or attempting to kill baleen whales in any of the following areas:

(1) In the waters north of 66° North Latitude except that from 150° East Longitude eastwards as far as 140° West Longitude the taking or killing of baleen whales by a factory ship or whale catcher shall be permitted between 66° North Latitude and 72° North Latitude;

(2) In the Atlantic Ocean and its dependent waters north of 40° South Latitude;

(3) In the Pacific Ocean and its dependent waters east of 150° West Longitude between 40° South Latitude and 35° North Latitude;

(4) In the Pacific Ocean and its dependent waters west of 150° West Longitude between 40° South Latitude and 20° North Latitude;

(5) In the Indian Ocean and its dependent waters north of 40° South Latitude.

§ 351.5 *Closed area for factory ships in Antarctic.* It is forbidden to use a whale catcher attached to a factory ship for the purpose of killing or attempting to kill baleen whales in the waters south of 40° South Latitude from 70° West Longitude westward as far as 160° West Longitude. (This article, as the result

[1] This paragraph was objected to within the prescribed period ending November 7, 1954, by the Government of Iceland, and subsequently by that of Denmark. Neither objection was withdrawn and the paragraph came into force on February 24, 1955, but is not binding on Iceland and Denmark. It ceases to operate as from February 24, 1960.

of the seventh meeting at Moscow, was rendered inoperative for a period of three years from November 8, 1955, and as a result of the ninth meeting in London was rendered inoperative for a further period from November 8, 1958, after which it will automatically become operative again on November 8, 1959.)

§ 351.6 *Limitations on the taking of humpback whales.* (a) It is forbidden to kill or attempt to kill humpback whales in the North Atlantic Ocean for a period of five years. (This five-year period comes to an end on November 8, 1959.)

(b) It is forbidden to kill or attempt to kill humpback whales in the waters south of 40° South Latitude between 0° Longitude and 70° West Longitude for a period of five years. (This five-year period comes to an end on November 8, 1959.)

(c) It is forbidden to use a whale catcher attached to a factory ship for the purpose of killing or attempting to kill humpback whales in any waters south of 40° South Latitude except on the 1st, 2d, 3d, and 4th of February in any year.

§ 351.7 *Closed seasons for pelagic whaling for baleen and sperm whales.* (a) It is forbidden to use a whale catcher attached to a factory ship for the purpose of killing or attempting to kill baleen whales (excluding minke whales) in any waters south of 40° South Latitude, except during the period from January 7 to April 7, following, both days inclusive; and no such whale catcher shall be used for the purpose of killing or attempting to kill blue whales before February 1 in any year.

(b) It is forbidden to use a whale catcher attached to a factory ship for the purpose of killing or attempting to kill sperm or minke whales, except as permitted by the Contracting Governments in accordance with paragraphs (c), (d) and (e) of this section.

(c) Each Contracting Government shall declare for all factory ships and whale catchers attached thereto under its jurisdiction, one continuous open season not to exceed eight months out of any period of twelve months during which the taking or killing of sperm whales by whale catchers may be permitted: *Provided,* That a separate open season may be declared for each factory ship and the whale catchers attached thereto.

(d) Each Contracting Government shall declare for all factory ships and whale catchers attached thereto under its jurisdiction one continuous open season not to exceed six months out of any period of twelve months during which the taking or killing of minke whales by the whale catchers may be permitted: *Provided,* That:

(1) A separate open season may be declared for each factory ship and the whale catchers attached thereto:

(2) The open season need not necessarily include the whole or any part of the period declared for other baleen whales pursuant to paragraph (a) of this section.

(e) Each Contracting Government shall declare for all whale catchers under its jurisdiction not operating in conjunction with a factory ship or land station one continuous open season not to exceed six months out of any period of twelve months during which the taking or killing of minke whales by such whale catchers may be permitted.

§ 351.8 *Catch quota for baleen whales.* (a) The number of baleen whales taken during the open season caught in any waters south of 40° South Latitude by whale catchers attached to factory ships under the jurisdiction of the Contracting Governments shall not exceed fifteen thousand blue-whale units in any one season: *Provided,* That in the season 1957–58 the number shall not exceed fourteen thousand five hundred blue-whale units.

(b) For the purposes of paragraph (a) of this section, blue-whale units shall be calculated on the basis that one blue whale equals:

(1) Two fin whales or
(2) Two and a half humpback whales or
(3) Six sei whales.

(c) Notification shall be given in accordance with the provision of Article VII of the Convention, within two days after the end of each calendar week, of data on the number of blue-whale units taken in any waters south of 40° South Latitude by all whale catchers attached to factory ships under the jurisdiction of each Contracting Government: *Provided,* That when the number of blue-whale units is deemed by the Bureau of International Whaling Statistics to have reached 13,500 (but 13,000 in the season 1957–58) notification shall be given as aforesaid at the end of each day of data on the number of bluewhale units taken.

(d) If it appears that the maximum catch of whales permitted by paragraph (a) of this section may be reached before April 7 of any year, the Bureau of International Whaling Statistics shall determine, on the basis of the data provided, the date on which the maximum catch of whales shall be deemed to have been reached and shall notify the master of each factory ship and each Contracting Government of that date not less than four days in advance thereof. The killing or attempting to kill baleen whales by whale catchers attached to factory ships shall be illegal in any waters south of 40° South Latitude after midnight of the date so determined.

(e) Notification shall be given in accordance with the provisions of Article VII of the Convention of each factory ship intending to engage in whaling operations in any waters south of 40° South Latitude.

§ 351.9 *Minimum size limits.* (a) It is forbidden to take or kill any blue, sei or humpback whales below the following lengths:

Blue whales 70 feet (21.3 metres),
Sei whales 40 feet (12.2 metres),
Humpback whales 35 feet (10.7 metres),

except that blue whales of not less than 65 feet (19.8 metres) and sei whales of not less than 35 feet (10.7 metres) in length may be taken for delivery to land stations: *Provided,* That the meat of such whales is to be used for local consumption as human or animal food.

(b) It is forbidden to take or kill any fin whales below 57 feet (17.4 metres) in length for delivery to factory ships or land stations in the Southern Hemisphere, and it is forbidden to take or kill fin whales below 55 feet (16.8 metres) for delivery to factory ships or land stations in the Northern Hemisphere; except that fin whales of not less than 55 feet (16.8 metres) may be taken for delivery to land stations in the Southern Hemisphere and fin whales of not less than 50 feet (15.2 metres) may be taken for delivery to land stations in the Northern Hempishere provided in each case that the meat of such whales is to be used for local consumption as human or animal food.

(c) It is forbidden to take or kill any sperm whales below 38 feet (11.6 metres) in length, except that sperm whales of not less than 35 feet (10.7 metres) in length may be taken for delivery to land stations.

(d) Whales must be measured when at rest on deck or platform, as accurately as possible by means of a steel tape measure fitted at the zero end with a spiked handle which can be stuck into the deck planking abreast of one end of the whale. The tape measure shall be stretched in a straight line parallel with the whale's body and read abreast the other end of the whale. The ends of the whale, for measurement purposes, shall be the point of the upper jaw and the notch between the tail flukes. Measurements, after being accurately read on the tape measure, shall be logged to the nearest foot, that is to say, any whale between 75 feet 6 inches and 76 feet 6 inches shall be logged as 76 feet, and any whale between 76 feet 6 inches and 77 feet 6 inches shall be logged as 77 feet. The measurement of any whale which falls on an exact half foot shall be logged at the next half foot, e. g. 76 feet 6 inches precisely shall be logged as 77 feet.

§ 351.10 *Closed seasons for land stations.* (a) It is forbidden to use a whale catcher attached to a land station for the purpose of killing or attempting to kill baleen and sperm whales except as permitted by the Contracting Government in accordance with paragraphs (b), (c), and (d) of this section.

(b) Each Contracting Government shall declare for all land stations under its jurisdiction, and whale catchers attached to such land stations, one open season during which the taking or killing of baleen (excluding minke) whales by the whale catchers shall be permitted. Such open season shall be for a period of not more than six consecutive months in any period of twelve months and shall apply to all land stations under the jurisdiction of the Contracting Government: *Provided,* That a separate open season may be declared for any land station used for the taking or treating of baleen (excluding minke) whales which is more than 1,000 miles from the nearest land station used for the taking or treating of baleen (excluding minke) whales under the jurisdiction of the same Contracting Government.

(c) Each Contracting Government shall declare for all land stations under its jurisdiction and for whale catchers attached to such land stations, one open season not to exceed eight continuous months in any one period of twelve months, during which the taking or killing of sperm whales by the whale catchers shall be permitted, such period of

eight months to include the whole of the period of six months declared for baleen whales (excluding minke whales) as provided for in paragraph (b) of this section: *Provided*, That a separate open season may be declared for any land station used for the taking or treating of sperm whales which is more than 1,000 miles from the nearest land station used for the taking or treating of sperm whales under the jurisdiction of the same Contracting Government.[2]

(d) (1) Each Contracting Government shall declare for all land stations under its jurisdiction and for whale catchers attached to such land stations one open season not to exceed six continuous months in any period of twelve months during which the taking or killing of minke whales by the whale catchers shall be permitted (such period not being necessarily concurrent with the period declared for other baleen whales, as provided for in paragraph (b) of this section): *Provided*, That a separate open season may be declared for any land station used for the taking or treating of minke whales which is more than 1,000 miles from the nearest land station used for the taking or treating of minke whales under the jurisdiction of the same Contracting Government.

(2) Except that a separate open season may be declared for any land station used for the taking or treating of minke whales which is located in an area having oceanographic conditions clearly distinguishable from those of the area in which are located the other land stations used for the taking or treating of minke whales under the jurisdiction of the same Contracting Government; but the declaration of a separate open season by virtue of the provisions of this paragraph shall not cause thereby the period of time covering the open seasons declared by the same Contracting Government to exceed nine continuous months of any twelve months.

(e) The prohibitions contained in this section shall apply to all land stations as defined in Article II of the Whaling Convention of 1946 and to all factory ships which are subject to the regulations governing the operation of land stations under the provisions of § 351.17.

§ 351.11 *Use of factory ships in waters other than south of 40° South Latitude.* It is forbidden to use a factory ship which has been used during a season in any waters south of 40° South Latitude for the purpose of treating baleen whales, in any other area for the same purpose within a period of one year from the termination of that season: *Provided*, That this paragraph shall not apply to a ship which has been used during the season solely for freezing or salting the meat and entrails of whales intended for human food or feeding animals.

§ 351.12 *Limitations of processing of whales.* (a) It is forbidden to use a factory ship or a land station for the purpose of treating any whales (whether or not killed by whale catchers under the jurisdiction of a Contracting Government) the killing of which by whale catchers under the jurisdiction of a Contracting Government is prohibited by the provisions of §§ 351.2, 351.4, 351.5, 351.6, 351.7, 351.8 or 351.10.

(b) All other whales (except minke whales) taken shall be delivered to the factory ship or land station and all parts of such whales shall be processed by boiling or otherwise, except the internal organs, whale bone and flippers of all whales, the meat of sperm whales and of parts of whales intended for human food or feeding animals.

(c) Complete treatment of the carcasses of "Dauhval" and of whales used as fenders will not be required in cases where the meat or bone of such whales is in bad condition.

§ 351.13 *Prompt processing required.* (a) The taking of whales for delivery to a factory ship shall be so regulated or restricted by the master or person in charge of the factory ship that no whale carcass (except of a whale used as a fender, which shall be processed as soon as is reasonably practicable) shall remain in the sea for a longer period than thirty-three hours from the time of killing to the time when it is hauled up for treatment.

(b) Whales taken by all whale catchers, whether for factory ships or land stations, shall be clearly marked so as to identify the catcher and to indicate the order of catching.

(c) All whale catchers operating in conjunction with a factory ship shall report by radio to the factory ship:

(1) The time when each whale is taken,

(2) Its species, and

(3) Its marking effected pursuant to paragraph (b) of this section.

(d) The information reported by radio pursuant to paragraph (c) of this section shall be entered immediately in a permanent record which shall be available at all times for examination by the whaling inspectors; and in addition there shall be entered in such permanent record the following information as soon as it becomes available:

(1) Time of hauling up for treatment,

(2) Length, measured pursuant to paragraph (d) of § 351.9,

(3) Sex,

(4) If female, whether milk-filled or lactating,

(5) Length and sex of foetus, if present, and

(6) A full explanation of each infraction.

(e) A record similar to that described in paragraph (d) of this section shall be maintained by land stations, and all of the information mentioned in the said paragraph shall be entered therein as soon as available.

§ 351.14 *Remuneration of employees.* Gunners and crews of factory ships, land stations, and whale catchers, shall be engaged on such terms that their remuneration shall depend to a considerable extent upon such factors as the species, size and yield of whales taken and not merely upon the number of the whales taken. No bonus or other remuneration shall be paid to the gunners or crews of whale catchers in respect to the taking of milk-filled or lactating whales.

§ 351.15 *Submission of laws and regulations.* Copies of all official laws and regulations relating to whales and whaling and changes in such laws and regulations shall be transmitted to the Commission.

§ 351.16 *Submission of statistical data.* Notification shall be given in accordance with the provisions of Article VII of the Convention with regard to all factory ships and land stations of statistical information (1) concerning the number of whales of each species taken, the number thereof lost, and the number treated at each factory ship or land station, and (2) as to the aggregate amounts of oil of each grade and quantities of meal, fertilizer (guano), and other products derived from them, together with (3) particulars with respect to each whale treated in the factory ship or land station as to the date and approximate latitude and longitude of taking, the species and sex of the whale, its length and, if it contains a foetus, the length and sex, if ascertainable, of the foetus. The data referred to in (1) and (3) above shall be verified at the time of the tally and there shall also be notification to the Commission of any information which may be collected or obtained concerning the calving grounds and migration routes of whales. In communicating this information there shall be specified:

(a) The name and gross tonnage of each factory ship;

(b) The number and aggregate gross tonnage of the whale catchers;

(c) A list of the land stations which were in operation during the period concerned.

§ 351.17 *Factory ship operations within territorial waters.*[3] (a) A factory ship which operates solely within territorial waters in one of the areas specified in paragraph (c) of this section, by permission of the Government having jurisdiction over those waters, and which flies the flag of that Government shall, while so operating, be subject to the regulations governing the operation of land stations and not to the regulations governing the operation of factory ships.

(b) Such factory ship shall not, within a period of one year from the termination of the season in which she so operated, be used for the purpose of treating baleen whales in any of the other areas specified in paragraph (c) of this section or south of 40° South Latitude.

[2] This paragraph came into force as from February 21, 1952, in respect to all Contracting Governments, except the Commonwealth of Australia, who lodged an objection to it within the prescribed period, and this objection was not withdrawn. The provisions of this paragraph are not therefore binding on the Commonwealth of Australia.

[3] This section was inserted by the Commission at its first meeting in 1949, and came into force on January 11, 1950, as regards all Contracting Governments except France, who therefore remain bound by the provisions of the original § 351.17, which reads as follows:

§ 351.17 Notwithstanding the definition of land station contained in Article II of the Convention, a factory ship operating under the jurisdiction of a Contracting Government, and the movements of which are confined solely to the territorial waters of that Government, shall be subject to the regulations governing the operation of land stations within the following areas:

(a) On the coast of Madagascar and its dependencies, and on the west coasts of French Africa;

(b) On the west coast of Australia in the area known as Shark Bay and northward to Northwest Cape and including Exmouth Gulf and King George's Sound, including the port of Albany; and on the east coast of Australia, in Twofold Bay and Jervis Bay.

(c) The areas referred to in paragraphs (a) and (b) of this section are:
(1) On the coast of Madagascar and its dependencies;
(2) On the west coasts of French Africa;
(3) On the coasts of Australia, namely on the whole east coast and on the west coast in the area known as Shark Bay and northward to North-west Cape and including Exmouth Gulf and King George's Sound, including the Port of Albany.

§ 351.18 *Definitions.* (a) The following expressions have the meanings respectively assigned to them, that is to say:

"Baleen whale" means any whale which has baleen or whale bone in the mouth, i. e., any whale other than a toothed whale.

"Blue whale" (Balaenoptera or Sibbaldus musculus) means any whale known by the name of blue whale, Sibbald's rorqual, or sulphur bottom.

"Dauhval" means any unclaimed dead whale found floating.

"Fin whale" (Balaenoptera physalus) means any whale known by the name of common finback, common rorqual, finback, finner, fin whale, herring whale, razorback, or true fin whale.

"Gray whale" (Rhachianectes glaucus) means any whale known by the name of gray whale, California gray, devil fish, hard head, mussel digger, gray back or rip sack.

"Humpback whale" (Megaptera nodosa or novaeangliae) means any whale known by the name of bunch, humpback, humpback whale, humpbacked whale, hump whale or hunchbacked whale.

"Minke whale" (Balaenoptera acutorostrata, B. Davidsoni, B. huttoni) means any whale known by the name of lesser rorqual, little piked whale, minke whale, pike-headed whale or sharp-headed finner.

"Right whale" (Balaena mysticetus; Eubalaena glacialis, E. australis, etc.; Neobalaena marginata) means any whale known by the name of Atlantic right whale, Arctic right whale, Biscayan right whale, bowhead, great polar whale, Greenland right whale, Greenland whale, Nordkaper, North Atlantic right whale, North Cape whale, Pacific right whale, pigmy right whale, Southern pigmy right whale, or Southern right whale.

"Sei whale" (Balaenoptera borealis) means any whale known by the name of sei whale, Ruldophi's rorqual, pollack whale or coalfish whale and shall be taken to include Bryde's whale (B. brydei).

"Sperm whale" (Physeter catodon) means any whale known by the name of sperm whale, spermacet whale, cachalot or pot whale.

"Toothed whale" means any whale which has teeth in the jaws.

(b) "Whales taken" means whales that have been killed and either flagged or made fast to catchers.

* * * * *

FISH AND WILDLIFE SERVICE

CHANGES IN FISHERY LOAN FUND REGULATIONS PROPOSED:

Changes in the regulations governing the granting of loans made from the Fishery Loan Fund were proposed by the U. S. Department of the Interior in a Notice of Proposed Rule Making published in the Federal Register of June 26, 1958. A 30-day period for comment, suggestions, or objections was provided.

The Fishery Loan Fund was established to make loans for financing and refinancing of operations, maintenance, repairs, replacement, and equipment of fishing vessels and fishing gear and for research into basic problems of the fisheries.

Under the proposed changes, fishery marketing cooperatives could qualify as applicants for loans. However, any money loaned could be used only in that part of the cooperative's activities which relate to vessel operations. The law does not provide funds for use in activities generally considered as "marketing."

Numerous changes based upon the experience of a year and a half are also suggested. Most of these are for clarification. Some would put into regulatory form practices and policies which have evolved in day-to-day operations under the loan program.

The Fishery Loan Fund was established by the Fish and Wildlife Act of 1956. It is a $10,000,000 revolving fund. Up to June 6, of this year, 230 applications have been approved for approximately $6,000,000.

The proposed changes in the regulations for the Fishery Loan Fund as published in the Federal Register of June 26, 1958, follow:

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[50 CFR Part 160]

LOAN PROCEDURES

NOTICE OF PROPOSED RULE MAKING

Notice is hereby given that pursuant to the authority vested in the Secretary of the Interior by section 4 of the Fish and Wildlife Act of 1956 (70 Stat. 1119, 1121), it is proposed to adopt the regulations set forth below as a revision of Part 160—Loan Procedures. The purpose of this revision is to clarify the meaning of several sections of the regulations, to include fishery marketing cooperatives as qualified loan applicants, to delete the provision allowing a person using a fishing vessel or fishing gear under his control on a lease or share basis to be a qualified applicant for financial assistance, and to specify additional purposes for which applications for financial assistance cannot be considered.

The regulations proposed to be revised related to matters which are exempt from the rule making requirements of the Administrative Procedure Act (5 U. S. C. 1003); however, it is the policy of the Department of the Interior, that, wherever practicable, the rule making provisions of the act be observed voluntarily. Accordingly, prior to the final adoption of the regulations set forth be-

low in tentative form, consideration will be given to any comments, suggestions, or objections relating thereto which are submitted in writing to the Director, Bureau of Commercial Fisheries, Washington 25, D. C., within thirty days of the date of publication of this notice in the FEDERAL REGISTER.

Dated: June 20, 1958.

ROGER ERNST,
Assistant Secretary of the Interior.

Sec.
160.1 Definition of terms.
160.2 Purposes of loan fund.
160.3 Interpretation of loan authorization.
160.4 Qualified loan applicants.
160.5 Basic limitations.
160.6 Applications.
160.7 Processing of loan applications.
160.8 Approval of loans.
160.9 Interest.
160.10 Maturity.
160.11 Security.
160.12 Books, records, and reports.
160.13 Penalties on default.

AUTHORITY: §§ 160.1 to 160.13 issued under sec. 4, 70 Stat. 1121.

§ 160.1 *Definitions of terms.* For the purposes of this part, the following terms shall be construed, respectively, to mean and to include:

(a) *Secretary.* The Secretary of the Interior or his authorized representative.

(b) *Administrator.* Administrator of the Small Business Administration or his authorized representative.

(c) *Person.* Individual, association, partnership or corporation, any one or all as the context requires.

(d) *State.* Any State, the Territories and possessions of the United States, the Commonwealth of Puerto Rico, and the District of Columbia.

§ 160.2 *Purposes of loan fund.* The broad objective of the fisheries loan fund created by the Fish and Wildlife Act of 1956 is to provide financial assistance which will aid the commercial fishing industry to bring about a general upgrading of the condition of both fishing vessels and fishing gear thereby contributing to more efficient and profitable fishing operations.

(a) Under section 4 of the act, the Secretary is authorized, among other things:

(1) To make loans for financing and refinancing of operations, maintenance, replacement, repair and equipment of fishing gear and vessels, and for research into the basic problems of fisheries.

(2) Subject to the specific limitations in the section, to consent to the modification, with respect to the rate of interest, time of payment of any installment of principal, or security, of any loan contract to which he is a party.

(b) All financial assistance granted by the Secretary must be for one or more of the purposes set forth in paragraph (a) of this section.

§ 160.3 *Interpretation of loan authorization.* The terms used in the act to describe the purposes for which loans may be granted are construed to be limited to the meanings ascribed in this section.

(a) *Operation of fishing gear and vessels.* The words "operation of fishing gear and vessels" mean and include all phases of activity directly associated with the catching of fish and shellfish for commercial purposes.

(b) *Maintenance of fishing gear and vessels.* The words "maintenance of fishing gear and vessels" mean the normal and routine upkeep of all parts of fishing gear and fishing vessels, including machinery and equipment.

(c) *Replacement of fishing gear and vessels.* The words "replacement of fishing gear and vessels" contemplate the purchase of fishing gear or equipment, parts, machinery, or other items incident to outfitting for fishing to replace lost, damaged, worn, obsolete, inefficient, or discarded items of a similar nature, or the purchase or construction of a fishing vessel to operate the same type of fishing gear as a comparable vessel which has been lost, destroyed or abandoned or has become obsolete or inefficient. Any vessel lost, destroyed or abandoned more than two years prior to the date of receipt of the application shall not be considered eligible for replacement.

(d) *Repair of fishing gear and vessels.* The words "repair of fishing gear and vessels" mean the restoration of any worn or damaged part of fishing gear or fishing vessels to an efficient operating condition.

(e) *Equipment of fishing gear and vessels.* The words "equipment of fishing gear and vessels" mean the parts, machinery, or other items incident to outfitting for fishing which are purchased for use in fishing operations.

(f) *Research into the basic problems of fisheries.* The words "research into the basic problems of fisheries" mean investigation or experimentation designed to lead to fundamental improvements in the capture or landing of fish conducted as an integral part of vessel or gear operations.

§ 160.4 *Qualified loan applicants.* (a) Any person residing or conducting business in any State shall be deemed to be a qualified applicant for financial assistance if such person;

(1) Owns a commercial fishing vessel of United States registry (if registration is required) used directly in the conduct of fishing operations, irrespective of the type, size, power, or other characteristics of such vessel;

(2) Owns any type of commercial fishing gear used directly in the catching of fish or shellfish;

(3) Owns any property, equipment, or facilities useful in conducting research into the basic problems of fisheries or possesses scientific, technological or other skills useful in conducting such research.

(4) Is a fishery marketing cooperative engaged in marketing all catches of fish or shellfish by its members pursuant to contractual or other enforceable arrangements which empower the cooperative to exercise full control over the conditions of sale of all such catches and disburse the proceeds from all such sales.

(b) Applications for financial assistance cannot be considered if the loan is to be used for:

(1) Any phase of a shore operation.

(2) Refinancing existing preferred mortgages or secured loans on fishing gear and vessels, except in those instances where the Secretary deems such refinancing to be desirable in carrying out the purpose of the Act.

(3) Paying creditors for debts previously incurred, except for marshalling and liquidating the indebtedness of the applicant to existing lien holders in those instances where the Secretary deems such action to be desirable in carrying out the purpose of the Act.

(4) (i) Effecting any change in ownership of a fishing vessel (except for replacement of a vessel or purchase of the interest of a deceased partner), (ii) replenishing working capital used for such purpose or (iii) liquidating a mortgage given for such purpose less than two years prior to the date of receipt of the application.

(5) Replacement of fishing gear or vessels where the applicant or applicants owned less than a 20 percent interest in said fishing gear or vessel to be replaced or owned less than 20 percent interest in a corporation owning said fishing gear or vessel: *Provided,* That applications for a replacement loan by an eligible applicant cannot be considered unless and until the remaining owners or shareholders shall agree in writing that they will not apply for a replacement loan on the same fishing gear or vessel.

(6) Repair of fishing gear or vessels where such fishing gear or vessels are not offered as collateral for the loan by the applicant.

(7) Financing new business ventures involving fishing operations.

§ 160.5 *Basic limitations.* Applications for financial assistance may be considered only where there is evidence that the credit applied for is not otherwise available on reasonable terms (a) from applicant's bank of account, (b) from the disposal at a fair price of assets not required by the applicant in the conduct of his business or not reasonably necessary to its potential growth, (c) through use of the personal credit and/or resources of the owner, partners, management, affiliates, or principal stockholders of the applicant, or (d) from other known sources of credit. The financial assistance applied for shall be deemed to be otherwise available on reasonable terms unless it is satisfactorily demonstrated that proof of refusal of the desired credit has been obtained from the applicant's bank of account: *Provided,* That if the amount of the loan applied for is in excess of the legal lending limit of the applicant's bank or in excess of the amount that the bank normally lends to any one borrower, then proof of refusal should be obtained from a correspondent bank or from any other lending institution whose lending capacity is adequate to cover the loan applied for. Proof of refusal of the credit applied for must contain the date, amount, and terms requested. Bank refusals to advance credit will not be considered the full test of unavailability of credit and, where there is knowledge or reason to believe that credit is otherwise available on reasonable terms from sources other than such banks, the credit applied for cannot be granted notwithstanding the receipt of written refusals from such banks.

§ 160.6 *Application.* Any person desiring financial assistance from the fisheries loan fund shall make application to

the Fish and Wildlife Service, Department of the Interior, Washington 25, D. C., on a loan application form furnished by that Service except that, in the discretion of the Secretary, an application made other than by use of the prescribed form may be considered if the application contains information deemed to be sufficient. Such application shall indicate the purposes for which the loan is to be used, the period of the loan, and the security to be offered.

§ 167.7 *Processing of loan applications.* If it is determined, on the basis of a preliminary review, that the application is complete and appears to be in conformity with established rules and procedures, a field examination shall be made. Following completion of the field investigation the application will be forwarded with an appropriate report to the Fish and Wildlife Service, Department of the Interior, Washington 25, D. C.

§ 160.8 *Approval of loans.* Loan agreements shall be executed on a form approved by the Secretary. The Secretary will evidence his approval of the loan by issuing a loan authorization covering the terms and conditions for making the loan. Such loan authorization shall be referred to the Administrator who will direct the closing of the loan with the applicant in the field and render services involving the collection of repayments and such other loan servicing functions as may be required. Any modification of the terms of a loan agreement following its execution must be agreed to in writing by the borrower and the Secretary.

§ 160.9 *Interest.* The rate of interest on all loans which may be granted is fixed at five per cent per annum.

§ 160.10 *Maturity.* The period of maturity of any loan which may be granted shall be determined and fixed according to the circumstances but in no event shall the date of maturity so fixed exceed a period of ten years.

§ 160.11 *Security.* Loans shall be approved only upon the furnishing of such security or other reasonable assurance of repayment as the Secretary may require. The proposed collateral for a loan must be of such a nature that, when considered with the integrity and ability of the management, and the applicant's past and prospective earnings, repayment of the loan will be reasonably assured.

§ 160.12 *Books, records, and reports.* The Secretary shall have the right to inspect such books and records of the applicant as the Secretary may deem necessary. Disbursements on a loan made under this part shall be made only upon the agreement of the loan applicant to maintain proper books of account and to submit such periodic reports as may be required by the Secretary during the period of the loan. During such period, the books and records of the loan applicant shall be made available at all reasonable times for inspection by the Secretary.

§ 160.13 *Penalties on default.* Unless otherwise provided in the loan agreement, failure on the part of a borrower to conform to the terms of the loan agreement will be deemed grounds upon which the Secretary may cause any one or all of the following steps to be taken:

(a) Discontinue any further advances of funds contemplated by the loan agreement.

(b) Take possession of any or all collateral given as security and the property purchased with borrowed funds.

(c) Prosecute legal action against the borrower.

(d) Declare the entire amount advanced immediately due and payable.

(e) Prevent further disbursement of and withdraw any funds advanced to the borrower and remaining under his control.

* * * * *

FISHERY PRODUCTS INSPECTION AND CERTIFICATION REGULATIONS, AND STANDARDS FOR FISH STICKS, BREADED SHRIMP, AND FROZEN FISH BLOCKS REISSUED:

The Department of the Interior has assumed, under the authority of the Fish and Wildlife Act of 1956, the responsibility for furnishing inspection, certification, and grading services to the fishing industry and issuing United States voluntary standards for fishery products. Promulgation of regulations for fishery products inspection and certification and United States standards for grades of (1) frozen fried fish sticks, (2) frozen raw breaded shrimp, and (3) frozen fish blocks were published in the Federal Register of July 3, 1958. As of July 1, 1958, the Department of the Interior has begun to exercise primary responsibility for these functions. Primary responsibility for these functions has been exercised by the U. S. Department of Agriculture since 1956, and that agency discontinued the exercise of that responsibility on June 30, 1958. The regulations and standards as they appeared in the Federal Register follow:

TITLE 50—WILDLIFE

Chapter I—Fish and Wildlife Service, Department of the Interior

Subchapter K—Processed Fishery Products, Processed Products Thereof, and Certain Other Processed Food Products

PART 170—INSPECTION AND CERTIFICATION

PART 171—UNITED STATES STANDARDS FOR GRADES OF FROZEN FRIED FISH STICKS

PART 172—UNITED STATES STANDARDS FOR GRADES OF FROZEN RAW BREADED SHRIMP

PART 173—UNITED STATES STANDARDS FOR GRADES OF FROZEN FISH BLOCKS

Basis and purpose. Functions relating to the inspection and certification of processed fishery products, processed products thereof, and certain other processed food products for quality and condition, have been performed since 1956 by the Department of Agriculture under authority contained in Title II of the Agricultural Marketing Act of August 14, 1946, as amended (7 U. S. C. 1621–1627), and in accordance with regulations constituting Part 52, Title 7, Code of Federal Regulations.

In furtherance of the inspection and certification program for processed fishery products and upon recommendations by the Fish and Wildlife Service, the Department of Agriculture has heretofore promulgated standards for fishery products as follows:

Subpart—United States Standards for Grades of Frozen Fried Fish Sticks, issued July 18, 1956; published July 21, 1956 (21 F. R. 5475; 7 CFR, 52.3141–52.3151); effective August 21, 1956.

Subpart—United States Standards for Grades of Frozen Raw Breaded Shrimp, issued December 30, 1957; published January 7, 1958 (23 F. R. 99; 7 CFR 52.3601–52.3607); effective March 1, 1958.

Subpart—United States Standards for Grades of Frozen Fish Blocks, issued February 3, 1958; published February 6, 1958 (23 F. R. 786; 7 CFR 52.3681–52.3692); effective April 1, 1958.

As found and determined by the Director of the Bureau of the Budget on March 22, 1958 (23 F. R. 2304), all functions of the Department of Agriculture which pertain to fish, shellfish and any products thereof, performed under the authority of Title II of the Agricultural Marketing Act of August 14, 1946, as amended (7 U. S. C. 1621–1627), including but not limited to the development and promulgation of grade standards for fishery products, the inspection and certification of such products, and the improvement of transportation facilities

and rates for fish and shellfish and any products thereof, were transferred to the Department of the Interior by section 6 (a) of the act of August 8, 1956, popularly known as the Fish and Wildlife Act of 1956 (16 U. S. C. Sec. 742e).

By notice of proposed rule making published on May 30, 1958 (23 F. R. 3780), notice was given of the intention of the Commissioner of Fish and Wildlife to recommend to the Secretary of the Interior the adoption of regulations, set forth therein in tentative form, to be codified as Title 50, Code of Federal Regulations, Part 170—Inspection and Certification and constituting an adaptation, without substantive change, of regulations currently codified as Title 7, Code of Federal Regulations, Part 52, to fit the needs of a fishery products standards program to be administered by the Department of the Interior in substitution for the Department of Agriculture. The public was informed that consideration would be given to any data, views, or arguments relating to the regulations which were received by the Commissioner, U. S. Fish and Wildlife Service, Washington 25, D. C., not later than June 16, 1958.

No data have been received from the public in response to the notice of proposed rule making. It has been determined, however, that the regulations set forth below to govern inspection and certification (Part 170) and prescribing grade standards for the fishery products identified in Parts 171, 172, and 173 are necessary and desirable to facilitate the administration of a fishery product inspection and certification service by the Department of the Interior.

The adoption of these regulations with an effective date of July 1, 1958, is necessary to implement the transfer from the Department of Agriculture to the Department of the Interior of functions relating to the promulgation of grade standards and the inspection and certification of fishery products. By virtue of an administrative agreement concluded between the two agencies, the Department of Agriculture will discontinue the exercise of primary responsibility for the inspection and certification of fishery products at the close of business on June 30, 1958, and the Department of the Interior will begin to exercise primary responsibility for these functions on July 1, 1958. All persons who currently are parties to contracts with the Department of Agriculture for the furnishing of inspection and certification services for fishery products have been notified in writing of the intention to substitute the Department of the Interior for the Department of Agriculture as the administering agency effective July 1, 1958, and have been given ample opportunity to prepare for the effective date of the regulations being adopted herein. No substantive changes have been made in these regulations and only those revisions are being accomplished which are necessary to codify them under Title 50, Code of Federal Regulations. In the circumstances, it has been determined that the 30-day advance publication requirement imposed by section 4 (c) of the Administrative Procedure Act of June 11, 1946, 60 Stat. 238; 5 U. S. C. 1003 (c), may be waived under the exemptions provided in that section. Accordingly, the regulations set forth below are adopted pursuant to the authority contained in Title II, section 205, of the Agricultural Marketing Act of 1946, as amended (7 U. S. C. 1624), and shall become effective on July 1, 1958.

Dated: June 30, 1958.

FRED A. SEATON,
Secretary of the Interior.

PART 170—INSPECTION AND CERTIFICATION

Sec.

170.1 Administration of regulations.

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AUTHORITY: §§ 170.1 to 170.103 issued under sec. 205, 60 Stat. 1090, as amended; 7 U. S. C. 1624.

§ 170.1 *Administration of regulations.* The Secretary of the Interior is charged with the administration of the regulations in this part except that he may delegate any or all of such functions to any officer or employee of the Bureau of Commercial Fisheries of the Department in his discretion.[1]

DEFINITIONS

§ 170.6 *Terms defined.* Words in the regulations in this part in the singular form shall be deemed to import the plural and vice versa, as the case may demand. For the purposes of the regulations in this part, unless the context otherwise requires, the following terms shall have the following meanings:

Acceptance number. "Acceptance number" means the number in a sampling plan that indicates the maximum number of deviants permitted in a sample of a lot that meets a specific requirement.

Act. "Act" means the applicable provisions of the Agricultural Marketing Act of 1946 (60 Stat. 1087 et seq., as amended; 7 U. S. C. 1621 et seq.).

[1] All functions of the Department of Agriculture which pertain to fish, shellfish and any products thereof, now performed under the authority of title II of the act of August 14, 1946, popularly known as the Agricultural Marketing Act of 1946, as amended (7 U. S. C. 1621–1627), including but not limited to the development and promulgation of grade standards, the inspection and certification, and improvement of transportation facilities and rates for fish and shellfish and any products thereof, were transferred to the Department of the Interior by the Director of the Budget (23 F. R. 2304) pursuant to section 6 (a) of the act of August 8, 1956, popularly known as the Fish and Wildlife Act of 1956 (16 U. S. C. sec. 742e).

Applicant. "Applicant" means any interested party who requests inspection service under the regulations in this part.

Case. "Case" means the number of containers (cased or uncased) which, by the particular industry are ordinarily packed in a shipping container.

Certificate of loading. "Certificate of loading" means a statement, either written or printed, issued pursuant to the regulations in this part, relative to checkloading of a processed product subsequent to inspection thereof.

Certificate of sampling. "Certificate of sampling" means a statement, either written or printed issued pursuant to the regulations in this part, identifying officially drawn samples and may include a description of condition of containers and the condition under which the processed product is stored.

Class. "Class" means a grade or rank of quality.

Condition. "Condition" means the degree of soundness of the product which may affect its merchantability and includes, but is not limited to those factors which are subject to change as a result of age, improper preparation and processing, improper packaging, improper storage or improper handling.

Department. "Department" means the United States Department of the Interior.

Deviant. "Deviant" means a sample unit affected by one or more deviations or a sample unit that varies in a specifically defined manner from the requirements of a standard, specification, or other inspection document.

Deviation. "Deviation" means any specifically defined variation from a particular requirement.

Director. "Director" means the Director of the Bureau of Commercial Fisheries.

Inspection certificate. "Inspection certificate" means a statement, either written or printed, issued pursuant to the regulations in this part, setting forth in addition to appropriate descriptive information relative to a processed product, and the container thereof, the quality and condition, or any part thereof, of the product and may include a description of the conditions under which the product is stored.

Inspection service. "Inspection service" means:

(a) The sampling pursuant to the regulations in this part;

(b) The determination pursuant to the regulations in this part of:

(1) Essential characteristics such as style, type, size, sirup density or identity of any processed product which differentiates between major groups of the same kind;

(2) The class, quality and condition of any processed product, including the condition of the container thereof by the examination of appropriate samples;

(c) The issuance of any certificate of sampling, inspection certificates, or certificates of loading of a processed product, or any report relative to any of the foregoing; or

(d) Performance by an inspector of any related services such as assigning an inspector in a processing plant to observe the preparation of the product from its raw state through each step in the entire process, or observe conditions under which the product is being prepared, processed, and packed, or observe plant sanitation as a prerequisite to the inspection of the processed product, either on a continuous or periodic basis, or checkload the inspected processed product in connection with the marketing of the processed product.

Inspector. "Inspector" means any employee of the Department authorized by the Secretary or any other person licensed by the Secretary to investigate, sample, inspect, and certify in accordance with the regulations in this part to any interested party the class, quality and condition of processed products covered in this part and to perform related duties in connection with the inspection service.

Interested party. "Interested party" means any person who has a financial interest in the commodity involved.

Licensed sampler. "Licensed sampler" means any person who is authorized by the Secretary to draw samples of processed products for inspection service, to inspect for identification and condition of containers in a lot, and may, when authorized by the Secretary, perform related services under the act and the regulations in this part.

Lot. "Lot" has the following meanings:

(a) For the purpose of charging fees and issuing certificates, "Lot" means any number of containers of the same size and type which contain a processed product of the same type and style located in the same or adjacent warehouses and which are available for inspection at any one time: *Provided,* That:

(1) Processed products in separate piles which differ from each other as to grade or other factors may be deemed to be separate lots;

(2) Containers in a pile bearing an identification mark different from other containers of such processed product in that pile, if determined to be of lower grade or deficient in other factors, may be deemed to be a separate lot; and

(3) If the applicant requests more than one inspection certificate covering different portions of such processed product, the quantity of the product covered by each certificate shall be deemed to be a separate lot.

(b) For the purpose of sampling and determining the grade or compliance with a specification, "Lot" means each pile of containers of the same size and type containing a processed product of the same type and style which is separated from other piles in the same warehouse, but containers in the same pile bearing an identification mark different from other containers in that pile may be deemed to be a separate lot.

Officially drawn sample. "Officially drawn sample" means any sample that has been selected from a particular lot by an inspector, licensed sampler, or by any other person authorized by the Secretary pursuant to the regulations in this part.

Person. "Person" means any individual, partnership, association, business trust, corporation, any organized group of persons (whether incorporated or not), the United States (including, but not limited to, any corporate agencies thereof), any State, county, or municipal government, any common carrier, and any authorized agent of any of the foregoing.

Plant. "Plant" means the premises, buildings, structures, and equipment (including, but not being limited to, machines, utensils, and fixtures) employed or used with respect to the manufacture or production of processed products.

Processed product. "Processed product" means any fishery product or other food product covered under the regulations in this part which has been preserved by any recognized commercial process, including, but not limited to, canning, freezing, dehydrating, drying, the addition of chemical substances, or by fermentation.

Quality. "Quality" means the inherent properties of any processed product which determine the relative degree of excellence of such product, and includes the effects of preparation and processing, and may or may not include the effects of packing media, or added ingredients.

Rejection number. "Rejection number" means the number in a sampling plan that indicates the minimum number of deviants in a sample that will cause a lot to fail a specific requirement.

Sample. "Sample" means any number of sample units to be used for inspection.

Sample unit. "Sample unit" means a container and/or its entire contents, a portion of the contents of a container or other unit of commodity, or a composite mixture of a product to be used for inspection.

Sampling. "Sampling" means the act of selecting samples of processed products for the purpose of inspection under the regulations in this part.

Secretary. "Secretary" means the Secretary of the Department or any other officer or employee of the Department authorized to exercise the powers and to perform the duties of the Secretary in respect to the matters covered by the regulations in this part.

Shipping container. "Shipping container" means an individual container designed for shipping a number of packages or cans ordinarily packed in a container for shipping or designed for packing unpackaged processed products for shipping.

Unofficially drawn sample. "Unofficially drawn sample" means any sample that has been selected by any person other than an inspector or licensed sampler, or by any other person not authorized by the Director pursuant to the regulations in this part.

§ 170.7 *Designation of official certificates, memoranda, marks, other identifications, and devices for purposes of the Agricultural Marketing Act.* Subsection 203 (h) of the Agricultural Marketing Act of 1946 provides criminal penalties for various specified offenses relating to official certificates, memoranda, marks or other identifications, and devices for making such marks or identifications, issued or authorized under section 203 of said act, and certain misrepresentations concerning the inspection or grading of agricultural products under said section. For the purposes of said subsection and the provisions in this part, the terms listed below shall have the respective meanings specified:

Official certificate. "Official certificate" means any form of certification, either written or printed, including those defined in § 170.6, used under this part to certify with respect to the inspection, class, grade, quality, size, quantity, or condition of products (including the compliance of products with applicable specifications).

Official device. "Official device" means a stamping appliance, branding device, stencil, printed label, or any other mechanically or manually operated tool that is approved by the Director for the purpose of applying any official mark or other identification to any product or the packaging material thereof.

Official identification. "Official identification" means any United States (U. S.) standard designation of class, grade, quality, size, quantity, or condition specified in this part or any symbol, stamp, label, or seal indicating that the product has been graded or inspected and/or indicating the class, grade, quality, size, quantity, or condition of the product approved by the Director and authorized to be affixed to any product, or affixed to or printed on the packaging material of any product.

Official mark. "Official mark" means the grade mark, inspection mark, combined form of inspection and grade mark, and any other mark, or any variations in such marks, including those prescribed in § 170.86 approved by the Secretary and authorized to be affixed to any product, or affixed to or printed on the packaging material of any product, stating that the product was graded or inspected or both, or indicating the appropriate U. S. Grade or condition of the product, or for the purpose of maintaining the identity of products graded or inspected or both under this part.

Official memorandum. "Official memorandum" means any initial record of findings made by an authorized person in the process of grading, inspecting, or sampling pursuant to this part, any processing or plant-operation report made by an authorized person in connection with grading, inspecting, or sampling under this part, and any report made by an authorized person of services performed pursuant to this part.

INSPECTION SERVICE

§ 170.12 *Where inspection service is offered.* Inspection service may be furnished wherever any inspector or licensed sampler is available and the facilities and conditions are satisfactory for the conduct of such service.

§ 170.13 *Who may obtain inspection service.* An application for inspection service may be made by any interested party, including, but not limited to, the United States and any instrumentality or agency thereof, any State, county, municipality, or common carrier, and any authorized agent in behalf of the foregoing.

§ 170.14 *How to make application.* An application for inspection service may be made to the office of inspection or to any inspector, at or nearest the place where the service is desired. An up-to-date list of the Inspection Field Offices of the Department may be obtained upon request to the Director. Satisfactory proof that the applicant is an interested party shall be furnished.

§ 170.15 *Information required in connection with application.* Application for inspection service shall be made in the English language and may be made orally (in person or by telephone), in writing, or by telegraph. If an application for inspection service is made orally, such application shall be confirmed promptly in writing. In connection with each application for inspection service, there shall be furnished such information as may be necessary to perform an inspection on the processed product for which application for inspection is made, including but not limited to, the name of the product, name and address of the packer or plant where such product was packed, the location of the product, its lot or car number, codes or other identification marks, the number of containers, the type and size of the containers, the interest of the applicant in the product, whether the lot has been inspected previously to the application by any Federal agency and the purpose for which inspection is desired.

§ 170.16 *Filing of application.* An application for inspection service shall be regarded as filed only when made in accordance with the regulations in this part.

§ 170.17 *Record of filing time.* A record showing the date and hour when each application for inspection or for an appeal inspection is received shall be maintained.

§ 170.18 *When application may be rejected.* An application for inspection service may be rejected by the Secretary (a) for non-compliance by the applicant with the regulations in this part, (b) for non-payment for previous inspection services rendered, (c) when the product is not properly identifiable by code or other marks, or (d) when it appears that to perform the inspection service would not be to the best interests of the Government. Such applicant shall be promptly notified of the reason for such rejection.

§ 170.19 *When application may be withdrawn.* An application for inspection service may be withdrawn by the applicant at any time before the inspection is performed: *Provided,* That, the applicant shall pay at the hourly rate prescribed in § 170.76 for the time incurred by the inspector in connection with such application, any travel expenses, telephone, telegraph or other expenses which have been incurred by the inspection service in connection with such application.

§ 170.20 *Disposition of inspected sample.* Any sample of a processed product that has been used for inspection may be returned to the applicant, at his request and expense; otherwise it shall be destroyed, or disposed of to a charitable institution.

§ 170.21 *Basis of inspection and grade or compliance determination.* (a) Inspection service shall be performed on the basis of the appropriate United States standards for grades of processed products, Federal, Military, Veterans Administration or other government agency specifications, written contract specification, or any written specification or instruction which is approved by the Secretary.

(b) Unless otherwise approved by the Director compliance with such grade standards, specifications, or instructions shall be determined by evaluating the product, or sample, in accordance with the requirements of such standards, specifications, or instructions: *Provided,* That when inspection for quality is based on any United States grade standard which contains a scoring system the grade to be assigned to a lot is the grade indicated by the average of the total scores of the sample units: *Provided further,* That:

(1) Such sample complies with the applicable standards of quality promulgated under the Federal Food, Drug, and Cosmetic Act;

(2) Such sample complies with the product description;

(3) Such sample meets the indicated grade with respect to factors of quality which are not rated by score points; and

(4) With respect to those factors of quality which are rated by score points, each of the following requirements is met:

(i) None of the sample units falls more than one grade below the indicated grade because of any quality factor to which a limiting rule applies;

(ii) None of the sample units falls more than 4 score points below the minimum total score for the indicated grade; and

(iii) The number of sample units classed as deviants does not exceed the applicable acceptance number indicated in the sampling plans contained in § 170.61. A "deviant," as used in this paragraph, means a sample unit that falls into the next grade below the indicated grade but does not score more than 4 points below the minimum total score for the indicated grade.

(5) If any of the provisions contained in subparagraphs (3) and (4) of this paragraph are not met the grade is determined by considering such provisions in connection with succeedingly lower grades until the grade of the lot, if assignable, is established.

§ 170.22 *Order of inspection service.* Inspection service shall be performed, insofar as practicable, in the order in which applications therefor are made except that precedence may be given to any such applications which are made by the United States (including, but not being limited to, any instrumentality or agency thereof) and to any application for an appeal inspection.

§ 170.23 *Postponing inspection service.* If the inspector determines that it is not possible to accurately ascertain the quality or condition of a processed product immediately after processing because the product has not reached equilibrium in color, sirup density, or drained weight, or for any other substantial reason, he may postpone inspection service for such period as may be necessary.

§ 170.24 *Financial interest of inspector.* No inspector shall inspect any processed product in which he is directly or indirectly financially interested.

§ 170.25 *Forms of certificates.* Inspection certificates, certificates of sampling or loading, and other memoranda concerning inspection service shall be issued on forms approved by the Secretary.

§ 170.26 *Issuance of certificates.* (a) An inspection certificate may be issued only by an inspector: *Provided,* That, another employee of the inspection service may sign any such certificate covering any processed product inspected by an inspector when given power of attorney by such inspector and authorized by the Secretary, to affix the inspector's signature to an inspection certificate which has been prepared in accordance with the facts set forth in the notes, made by the inspector, in connection with the inspection.

(b) A certificate of loading shall be issued and signed by the inspector or licensed sampler authorized to check the loading of a specific lot of processed products: *Provided,* That, another employee of the inspection service may sign such certificate of loading covering any processed product checkloaded by an inspector or licensed sampler when given power of attorney by such inspector or licensed sampler and authorized by the Secretary to affix the inspector's or licensed sampler's signature to a certificate of loading which has been prepared in accordance with the facts set forth in the notes made by the inspector or licensed sampler in connection with the checkloading of a specific lot of processed products.

§ 170.27 *Issuance of corrected certificates.* A corrected inspection certificate may be issued by the inspector who issued the original certificate after distribution of a certificate if errors, such as incorrect dates, code marks, grade statements, lot or car numbers, container sizes, net or drained weights, quantities, or errors in any other pertinent information require the issuance of a corrected certificate. Whenever a corrected certificate is issued, such certificate shall supercede the inspection certificate which was issued in error and the superseded certificate shall become null and void after the issuance of the corrected certificate.

§ 170.28 *Issuance of an inspection report in lieu of an inspection certificate.* A letter report in lieu of an inspection certificate may be issued by an inspector when such action appears to be more suitable than an inspection certificate: *Provided,* That, the issuance of such report is approved by the Secretary.

§ 170.29 *Disposition of inspection certificates.* The original of any inspection certificate, issued under the regulations in this part, and not to exceed four copies thereof, if requested prior to issuance, shall be delivered or mailed promptly to the applicant, or person designated by the applicant. All other copies shall be filed in such manner as the Secretary may designate. Additional copies of any such certificates may be supplied to any interested party as provided in § 170.78.

§ 170.30 *Report of inspection results prior to issuance of formal report.* Upon request of any interested party, the results of an inspection may be telegraphed or telephoned to him, or to any other person designated by him, at his expense.

APPEAL INSPECTION

§ 170.36 *When appeal inspection may be requested.* An application for an appeal inspection may be made by any interested party who is dissatisfied with the results of an inspection as stated in an inspection certificate, if the lot of processed products can be positively identified by the inspection service as the lot from which officially drawn samples were previously inspected. Such application shall be made within thirty (30) days following the day on which the previous inspection was performed, except upon approval by the Secretary the time within which an application for appeal inspection may be made may be extended.

§ 170.37 *Where to file for an appeal inspection and information required.* (a) Application for an appeal inspection may be filed with:

(1) The inspector who issued the inspection certificate on which the appeal covering the processed product is requested; or

(2) The inspector in charge of the office of inspection at or nearest the place where the processed product is located.

(b) The application for appeal inspection shall state the location of the lot of processed products and the reasons for the appeal; and date and serial number of the certificate covering inspection of the processed product on which the appeal is requested, and such application may be accompanied by a copy of the previous inspection certificate and any other information that may facilitate inspection. Such application may be made orally (in person or by telephone), in writing, or by telegraph. If made orally, written confirmation shall be made promptly.

§ 170.38 *When an application for an appeal inspection may be withdrawn.* An application for appeal inspection may be withdrawn by the applicant at any time before the appeal inspection is performed: *Provided,* That, the applicant shall pay at the hourly rate prescribed in § 170.76, for the time incurred by the inspector in connection with such application, any travel expenses, telephone, telegraph, or other expenses which have been incurred by the inspection service in connection with such application.

§ 170.39 *When appeal inspection may be refused.* An application for an appeal inspection may be refused if:

(a) The reasons for the appeal inspection are frivolous or not substantial;

(b) The quality or condition of the processed product has undergone a material change since the inspection covering the processed product on which the appeal inspection is requested;

(c) The lot in question is not, or cannot be made accessible for the selection of officially drawn samples;

(d) The lot relative to which appeal inspection is requested cannot be positively identified by the inspector as the lot from which officially drawn samples were previously inspected; or

(e) There is noncompliance with the regulations in this part. Such applicant shall be notified promptly of the reason for such refusal.

§ 170.40 *Who shall perform appeal inspection.* An appeal inspection shall be performed by an inspector or inspectors (other than the one from whose inspection the appeal is requested) authorized for this purpose by the Secretary and, whenever practical, such appeal inspection shall be conducted jointly by two such inspectors: *Provided,* That the inspector who made the inspection on which the appeal is requested may be authorized to draw the samples when another inspector or licensed sampler is not available in the area where the product is located.

§ 170.41 *Appeal inspection certificate.* After an appeal inspection has been completed, an appeal inspection certificate shall be issued showing the results of such appeal inspection; and such certificate shall supersede the inspection certificate previously issued for the processed product involved. Each appeal inspection certificate shall clearly identify the number and date of the inspection certificate which it supersedes. The superseded certificate shall become null and void upon the issuance of the appeal inspection certificate and shall no longer represent the quality or condition of the processed product described therein. The inspector or inspectors issuing an appeal inspection certificate shall forward notice of such issuance to such persons as he considers necessary to prevent misuse of the superseded certificate if the original and all copies of such superseded certificate have not previously been delivered to the inspector or inspectors issuing the appeal inspection certificate. The provisions in the regulations in this part concerning forms of certificates, issuance of certificates, and disposition of certificates shall apply to appeal inspection certificates, except that copies of such appeal inspection certificates shall be furnished all interested parties who received copies of the superseded certificate.

LICENSING OF SAMPLERS AND INSPECTORS

§ 170.47 *Who may become licensed sampler.* Any person deemed to have the necessary qualifications may be licensed as a licensed sampler to draw samples for the purpose of inspection under the regulations in this part. Such a license shall bear the printed signature of the Secretary, and shall be countersigned by an authorized employee of the Department. Licensed samplers shall have no authority to inspect processed products under the regulations in this part except as to identification and condition of the containers in a lot. A licensed sampler shall perform his duties pursuant to the regulations in this part as directed by the Director.

§ 170.48 *Application to become a licensed sampler.* Application to become a licensed sampler shall be made to the Secretary on forms furnished for that purpose. Each such application shall be signed by the applicant in his own handwriting, and the information contained therein shall be certified by him to be true, complete, and correct to the best of his knowledge and belief, and the application shall contain or be accompanied by:

(a) A statement showing his present and previous occupations, together with names of all employers for whom he has worked, with periods of service, during the ten years previous to the date of his application;

(b) A statement that, in his capacity as a licensed sampler, he will not draw samples from any lot of processed products with respect to which he or his employer is an interested party;

(c) A statement that he agrees to comply with all terms and conditions of the regulations in this part relating to duties of licensed samplers; and

(d) Such other information as may be requested.

§ 170.49 *Inspectors.* Inspections will ordinarily be performed by employees under the Secretary who are employed as Federal Government employees for that purpose. However, any person employed under any joint Federal-State inspection service arrangement may be licensed, if otherwise qualified, by the Secretary to make inspections in accordance with this part on such processed products as may be specified in his license. Such license shall be issued only in a case where the Secretary is satisfied that the particular person is qualified to perform adequately the inspection service for which such person is to be licensed. Each such license shall bear the printed signature of the Secretary and shall be countersigned by an authorized employee of the Department. An inspector shall perform his duties pursuant to the regulations in this part as directed by the Director.

§ 170.50 *Suspension or revocation of license of licensed sampler or licensed inspector.* Pending final action by the Secretary, the Director may, whenever he deems such action necessary, suspend the license of any licensed sampler, or licensed inspector, issued pursuant to the regulations in this part, by giving notice of such suspension to the respective licensee, accompanied by a statement of the reasons therefor. Within seven days after the receipt of the aforesaid notice and statement of reasons by such licensee, he may file an appeal, in writing, with the Secretary supported by any argument or evidence that he may wish to offer as to why his license should not be suspended or revoked. After the expiration of the aforesaid seven days period and consideration of such argument and evidence, the Secretary shall take such action as he deems appropriate with respect to such suspension or revocation.

§ 170.51 *Surrender of license.* Upon termination of his services as a licensed sampler or licensed inspector, or suspension or revocation of his license, such licensee shall surrender his license immediately to the office of inspection serving the area in which he is located. These same provisions shall apply in a case of an expired license.

SAMPLING

§ 170.57 *How samples are drawn by inspectors or licensed samplers.* An inspector or a licensed sampler shall select samples, upon request, from designated lots of processed products which are so placed as to permit thorough and proper sampling in accordance with the regulations in this part. Such person shall, unless otherwise directed by the Secretary, select sample units of such products at random, and from various locations in each lot in such manner and number, not inconsistent with the regulations in this part, as to secure a representative sample of the lot. Samples drawn for inspection shall be furnished by the applicant at no cost to the Department.

§ 170.58 *Accessibility for sampling.* Each applicant shall cause the processed products for which inspection is requested to be made accessible for proper sampling. Failure to make any lot accessible for proper sampling shall be sufficient cause for postponing inspection service until such time as such lot is made accessible for proper sampling.

§ 170.59 *How officially drawn samples are to be identified.* Officially drawn samples shall be marked by the inspector or licensed sampler so such samples can be properly identified for inspection.

§ 170.60 *How samples are to be shipped.* Unless otherwise directed by the Secretary, samples which are to be shipped to any office of inspection shall be forwarded to the office of inspection serving the area in which the processed products from which the samples were drawn is located. Such samples shall be shipped in a manner to avoid, if possible, any material change in the quality or condition of the sample of the processed product. All transportation charges in connection with such shipments of samples shall be at the expense of the applicant and wherever practicable, such charges shall be prepaid by him.

§ 170.61 *Sampling plans and procedures for determining lot compliance.* (a) Except as otherwise provided for in this section in connection with in-plant inspection and unless otherwise approved by the Secretary, samples shall be selected from each lot in the exact number of sample units indicated for the lot size in the applicable single sampling plan or, at the discretion of the inspection service, any comparable multiple sampling plan: *Provided,* That at the discretion of the inspection service the number of sample units selected may be increased to the exact number of sample units indicated for any one of the larger sample sizes provided for in the appropriate plans.

(b) Under the single sampling plans with respect to any specified requirement:

(1) If the number of deviants (as defined in connection with the specific requirement) in the sample does not exceed the acceptance number prescribed for the sample size the lot meets the requirement;

(2) If the number of deviants (as defined in connection with the specific requirement) in the sample exceeds the acceptance number prescribed for the sample size the lot fails the requirement.

(c) Under the multiple sampling plans inspection commences with the smallest sample size indicated under the appropriate plan and with respect to any specified requirement:

(1) If the number of deviants (as defined in connection with the specific requirement) in the sample being considered does not exceed the acceptance number prescribed for that sample size, the lot meets the requirement;

(2) If the number of deviants (as defined in connection with the specific requirement) in the sample being considered equals or exceeds the rejection number prescribed for that sample size, the lot fails the requirement; or

(3) If the number of deviants (as defined in connection with the specific requirement) in the sample being considered falls between the acceptance and rejection numbers of the plan, additional sample units are added to the sample so that the sample thus cumulated equals the next larger cumulative sample size in the plan. It may then be determined that the lot meets or fails the specific requirement by considering the cumulative sample and applying the procedures outlined in subparagraphs (1) and (2) of this paragraph or by considering successively larger samples cumulated in the same manner until the lot meets or fails the specific requirement.

(d) If in the conduct of any type of in-plant inspection the sample is examined before the lot size is known and the number of sample units exceeds the prescribed sample size for such lot but does not equal any of the prescribed larger sample sizes the lot may be deemed to meet or fail a specific requirement in accordance with the following procedure:

(1) If the number of deviants (as defined in connection with the specific requirement) in the nonprescribed sample does not exceed the acceptance number of the next smaller sample size the lot meets the requirements;

(2) If the number of deviants (as defined in connection with the specific requirement) in the nonprescribed sample equals the acceptance number prescribed for the next larger sample size additional sample units shall be selected to increase the sample to the next larger prescribed sample size;

(3) If the number of deviants (as defined in connection with the specific requirement) in the nonprescribed sample exceeds the acceptance number prescribed for the next larger sample size the lot fails the requirement.

(e) In the event that the lot compliance determination provisions of a standard or specification are based on the number of specified deviations instead of deviants the procedures set forth in this section may be applied by substituting the word "deviation" for the word "deviant" wherever it appears.

(f) Sampling plans referred to in this section are those contained in Tables I, II, III, IV, V, and VI which follow or any other plans which are applicable. For processed products not included in these tables, the minimum sample size shall be the exact number of sample units prescribed in the table, container group, and lot size that, as determined by the inspector, most closely resembles the product, type, container size and amount of product to be sampled.

§ 170.62 *Issuance of certificate of sampling.* Each inspector and each licensed sampler shall prepare and sign a certificate of sampling to cover the samples drawn by the respective person, except that an inspector who inspects the samples which he has drawn need not prepare a certificate of sampling. One copy of each certificate of sampling prepared shall be retained by the inspector or licensed sampler (as the case

SINGLE SAMPLING PLANS AND ACCEPTANCE LEVELS

TABLE I—CANNED OR SIMILARLY PROCESSED FISHERY PRODUCTS, AND PRODUCTS THEREOF CONTAINING UNITS OF SUCH SIZE AND CHARACTER AS TO BE READILY SEPARABLE

Container size group	Lot size (number of containers)								
GROUP 1									
Any type of container of less volume than that of a No. 300 size can (300 x 407).	3,000 or less	3,001–14,400	14,401–48,000	48,001–96,000	96,001–156,000	156,001–228,000	228,001–300,000	300,001–420,000	Over 420,000.
GROUP 2									
Any type of container of a volume equal to or exceeding that of a No. 300 size can, but not exceeding that of a No. 3 cylinder size can (404 x 700).	2,400 or less	2,401–12,000	12,001–24,000	24,001–48,000	48,001–72,000	72,001–108,000	108,001–168,000	168,001–240,000	Over 240,000.
GROUP 3									
Any type of container of a volume exceeding that of a No. 3 cylinder size can, but not exceeding that of a No. 12 size can (603 x 812).	1,200 or less	1,201–7,200	7,201–15,000	15,001–24,000	24,001–36,000	36,001–60,000	60,001–84,000	84,001–120,000	Over 120,000.
GROUP 4									
Any type of container of a volume exceeding that of a No. 12 size can, but not exceeding that of a 5-gallon container.	200 or less	201–800	801–1,600	1,601–2,400	2,401–3,600	3,601–8,000	8,001–16,000	16,001–28,000	Over 28,000
GROUP 5									
Any type of container of a volume exceeding that of a 5-gallon container.	25 or less	26–80	81–200	201–400	401–800	801–1,200	1,201–2,000	2,001–3,200	Over 3,200.
Single sampling plans [1]									
Sample size (number of sample units).[2]	3	6	13	21	29	38	48	60	72
Acceptance number	0	1	2	3	4	5	6	7	8

[1] For extension of the single sample sizes beyond 72 sample units, refer to table V of this section; for multiple sampling plans comparable to the various single sampling plans refer to table VI of this section.

[2] The sample units for the various container size groups are as follows: Groups 1, 2, and 3—1 container and its entire contents. Groups 4 and 5—approximately 2 pounds of product. When determined by the inspector that a 2-pound sample unit is inadequate, a larger sample unit may be substituted.

TABLE II—FROZEN OR SIMILARLY PROCESSED FISHERY PRODUCTS, AND PRODUCTS THEREOF CONTAINING UNITS OF SUCH SIZE AND CHARACTER AS TO BE READILY SEPARABLE

Container size group	Lot size (number of containers)								
GROUP 1									
Any type of container of 1 pound or less net weight.	2,400 or less	2,401–12,000	12,001–24,000	24,001–48,000	48,001–72,000	72,001–108,000	108,001–168,000	168,001–240,000	Over 240,000.
GROUP 2									
Any type of container over 1 pound but not over 4 pounds net weight.	1,800 or less	1,801–8,400	8,401–18,000	18,001–36,000	36,001–60,000	60,001–96,000	96,001–132,000	132,001–168,000	Over 168,000.
GROUP 3									
Any type of container over 4 pounds but not over 10 pounds net weight.	900 or less	901–3,600	3,601–10,800	10,801–18,000	18,001–36,000	36,001–60,000	60,001–84,000	84,001–120,000	Over 120,000.
GROUP 4									
Any type of container over 10 pounds but not over 100 pounds net weight.	200 or less	201–800	801–1,600	1,601–2,400	2,401–3,600	3,601–8,000	8,001–16,000	16,001–28,000	Over 28,000.
GROUP 5									
Any type of container over 100 pounds net weight.	25 or less	26–80	81–200	201–400	401–800	801–1,200	1,201–2,000	2,001–3,200	Over 3,200.
Single sampling plans [1]									
Sample size (number of sample units).[2]	3	6	13	21	29	38	48	60	72
Acceptance number	0	1	2	3	4	5	6	7	

[1] For extension of the single sample sizes beyond 72 sample units, refer to table V of this section; for multiple sampling plans comparable to the various single sampling plans refer to table VI of this section.

[2] The sample units for the various container size groups are as follows: Groups 1, 2, and 3—1 container and its entire contents. Groups 4 and 5—approximately 3 pounds of product. When determined by the inspector that a 3-pound sample unit is inadequate, a larger sample unit or 1 or more containers and their entire contents may be substituted for 1 or more sample units of 3 pounds.

may be) and the original and all other copies thereof shall be disposed of in accordance with the instructions of the Secretary.

§ 170.63 *Identification of lots sampled.* Each lot from which officially drawn samples are selected shall be marked in such manner as may be prescribed by the Secretary, if such lots do not otherwise possess suitable identification.

FEES AND CHARGES

§ 170.69 *Payment of fees and charges.* Fees and charges for any inspection service shall be paid by the interested party making the application for such service, in accordance with the applicable provisions of the regulations in this part, and, if so required by the person in charge of the office of inspection serving the area where the services are to be performed, an advance of funds prior to rendering inspection service in an amount suitable to the Secretary, or a surety bond suitable to the Secretary, may be required as a guarantee of payment for the services rendered. All fees and charges for any inspection service performed pursuant to the regulations in this part shall be paid by check, draft, or money order payable to the Treasurer of

SINGLE SAMPLING PLANS AND ACCEPTANCE LEVELS—Continued

TABLE III—CANNED, FROZEN, OR OTHERWISE PROCESSED FISHERY AND RELATED PRODUCTS, AND PRODUCTS THEREOF OF A COMMINUTED, FLUID, OR HOMOGENEOUS STATE

Container size group [1]	Lot size (number of containers)								
GROUP 1									
Any type of container of 12 ounces or less.	5,400 or less..	5, 401–21, 600	21, 601–62, 400	62, 401–112, 000	112, 001–174, 000	174, 001–240, 000	240, 001–360, 000	360, 001–480, 000	Over 480,000.
GROUP 2									
Any type of container over 12 ounces but not over 60 ounces.	3,600 or less..	3, 601–14, 400	14, 401–48, 000	48, 001–96, 000	96, 001–150, 000	150, 001–228, 000	228, 001–300, 000	300, 001–420, 000	Over 420,000.
GROUP 3									
Any type of container over 60 ounces but not over 160 ounces.	1,800 or less..	1, 801–8, 400	8, 401–18, 000	18, 001–36, 000	36, 001–60, 000	60, 001–96, 000	96, 001–132, 000	132, 001–168, 000	Over 168,000.
GROUP 4									
Any type of container over 160 ounces but not over 10 gallons or 100 pounds whichever is applicable.	200 or less...	201–800	801–1, 600	1, 601–3, 200	3, 201–8, 000	8, 001–16, 000	16, 001–24, 000	24, 001–32, 000	Over 32,000.
GROUP 5									
Any type of container over 10 gallons or 100 pounds whichever is applicable.	25 or less....	26–80	81–200	201–400	401–800	801–1, 200	1, 201–2, 000	2, 001–3, 200	Over 3,200.
Single sampling plans [2]									
Sample size (number of sample units). [3]	3	6	13	21	29	38	48	60	72
Acceptance number	0	1	2	3	4	5	6	7	8

[1] Ounces pertain to either fluid ounces of volume or avoirdupois ounces of net weight whichever is applicable for the product involved.

[2] For extension of the single sample sizes beyond 72 sample units, refer to table V of this section; for multiple sampling plans comparable to the various single sampling plans refer to table VI of this section.

[3] The sample units for the various container size groups are as follows: Groups 1, 2, and 3—1 container and its entire contents. A smaller sample unit may be substituted in group 3 at the inspector's discretion. Groups 4, 5, and 6—approximately 16 ounces of product. When determined by the inspector that a 16-ounce sample unit is inadequate, a larger sample unit may be substituted.

TABLE IV—DEHYDRATED FISHERY AND RELATED PRODUCTS

Container size group	Lot size (number of containers)								
GROUP 1									
Any type of container of 1 pound or less net weight.	1,800 or less..	1, 801–8, 400	8, 401–18, 000	18, 001–36, 000	36, 001–60, 000	60, 001–96, 000	96, 001–132, 000	132, 001–168, 000	Over 168,000.
GROUP 2									
Any type of container over 1 pound but not over 6 pounds net weight.	900 or less...	901–3, 600	3, 601–10, 800	10, 801–18, 000	18, 001–36, 000	36, 001–60, 000	60, 001–84, 000	84, 001–120, 000	Over 120,000.
GROUP 3									
Any type of container over 6 pounds but not over 20 pounds net weight.	200 or less...	201–800	801–1, 600	1, 601–3, 200	3, 201–8, 000	8, 001–16, 000	16, 001–24, 000	24, 001–32, 000	Over 32,000.
GROUP 4									
Any type of container over 20 pounds but not over 100 pounds net weight.	48 or less....	49–400	401–1, 200	1, 201–2, 000	2, 001–2, 800	2, 801–6, 000	6, 001–9, 600	9, 601–15, 000	Over 15,000.
GROUP 5									
Any type of container over 100 pounds net weight.	16 or less....	17–80	81–200	201–400	401–800	801–1, 200	1, 201–2, 000	2, 001–3, 200	Over 3,200.
Single sampling plans [1]									
Sample size (number of sample units). [2]	3	6	13	21	29	38	48	60	72
Acceptance number	0	1	2	3	4	5	6	7	8

[1] For extension of the single sample sizes beyond 72 sample units, refer to table V of this section; for multiple sampling plans comparable to the various single sampling plans refer to table VI of this section.

[2] The sample units for the various container size groups are as follows: Group 1—1 container and its entire contents. Groups 2, 3, 4, and 5—1 container and its entire contents or a smaller sample unit when determined by the inspector to be adequate.

TABLE V—SINGLE SAMPLING PLANS FOR USE IN INCREASING SAMPLE SIZE BEYOND 72 SAMPLE UNITS

Sample size, n	84	96	108	120	132	144	156	168	180	192	204	216	230	244	258	272	286	300	314	328	342	356	370	384	400
Acceptance numbers, c	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33

the United States and remitted to the office of inspection serving the area in which the services are performed, within ten (10) days from the date of billing, unless otherwise specified in a contract between the applicant and the Secretary, in which latter event the contract provisions shall apply.

§ 170.70 *Schedule of fees.* (a) Unless otherwise provided in a written agreement between the applicant and the Secretary, the fees to be charged and collected for any inspection service performed under the regulations in this part at the request of the United States, or any agency or instrumentality thereof, shall be at the rate of $4.50 per hour.

(b) Unless otherwise provided in the regulations in this part, the fees to be charged and collected for any inspection service performed under the regulations in this part shall be based on the applicable rates specified in this section.[3]

(1) *Canned or similarly processed fishery products, and products thereof.*

OFFICIALLY DRAWN SAMPLES

For each lot packed in containers of a volume not exceeding that of a No. 12 size can (603 x 812):

MULTIPLE SAMPLING PLANS[1]

TABLE VI—MULTIPLE SAMPLING PLANS COMPARABLE TO THE INDICATED SINGLE SAMPLING PLANS

Indicated single sampling plan:								
Single sample size, n	6	13	21	29	38	48	60	72
Acceptance numbers, c	1	2	3	4	5	6	7	8
Cumulative sample sizes, n_1, and acceptance numbers, c, and rejection numbers, r, for multiple sampling.	n_1 c r 4 0 2 6 0 2 8 1 2	n_1 c r 8 0 3 10 0 3 12 1 3 14 2 3	n_1 c r 10 0 3 14 1 4 18 1 4 22 2 5 26 4 5	n_1 c r 12 0 4 16 0 4 20 1 5 24 2 5 28 3 6 32 3 6 36 5 6	n_1 c r 14 0 4 20 0 5 26 1 6 32 2 6 38 3 7 44 6 7	n_1 c r 16 0 4 24 1 5 32 2 6 40 3 8 48 4 8 56 7 8	n_1 c r 18 0 5 28 1 6 38 2 7 48 3 8 58 4 8 68 8 9	n_1 c r 22 0 5 32 1 7 42 2 8 52 3 9 62 5 10 72 6 10 82 9 10

[1] These multiple sampling plans may be used in lieu of the single sampling plans listed at the heading of each column.

Minimum fee for 600 cases or less	[1] $9.00
For each additional 100 cases, or fraction thereof, in excess of 600 cases but not in excess of 10,000 cases	[1] 1.00
For each additional 100 cases, or fraction thereof, in excess of 10,000 cases	[1] .80

UNOFFICIALLY DRAWN SAMPLES

For containers of a volume not exceeding that of a No. 3 size can (404 x 414):

Minimum fee for 4 containers or less	$4.50
For each additional container in excess of 4 containers	1.00

For containers of a volume exceeding that of a No. 3 size can (404 x 414), but not exceeding that of a No. 12 size can (603 x 812):

Minimum fee for 2 containers or less	$4.50
For each additional container in excess of 2 containers	2.00

(2) *Other processed food products.* The fee to be charged and collected for the inspection of any processed product not included in subparagraph (1) of this paragraph shall be at the rate of $4.50 per hour for the time consumed by the inspector in making the inspection, including the time consumed in sampling by the inspector or licensed sampler: *Provided,* That, fees for sampling time will not be assessed by the office of inspection when such fees have been assessed and collected directly from the applicant by a licensed sampler.

§ 170.71 *Fees to be charged and collected for sampling when performed by a licensed sampler.* Such sampling fees as are specifically prescribed by the Secretary in connection with the licensing of the particular sampler (which fees are to be prescribed in the light of the sampling work to be performed by such sampler and other pertinent factors) may be assessed and collected by such licensed sampler directly from the applicant: *Provided,* That if such licensed sampler is an employee of a State, the appropriate authority of that State may make the collection, or they may be assessed and collected by the office of inspection serving the area where the services are performed.

[1] However, the fee for any additional lots of 200 cases or less which are offered for inspection by the same applicant at the same time and which are available for inspection at the same time and place shall be $6.75.

[2] The fees specified in this section are exclusive of charges for such micro, chemical and certain other special analyses, other than salt and acidity by direct titration, soluble solids (by refractometer) or total solids (by refractometer), which may be requested by the applicant or required by the inspector to determine the quality or condition of the processed product.

§ 170.72 *Inspection fees when charges for sampling have been collected by a licensed sampler.* For each lot of processed products from which samples have been drawn by a licensed sampler and with respect to which the sampling fee has been collected by the licensed sampler, the fee to be charged for the inspection shall be 75 percent of the fee provided in this part applicable to the respective processed product: *Provided,* That, if the fee charged for the inspection service is based on the hourly rate of charge, the fee shall be at the rate of $4.50 per hour prescribed in this part.

§ 170.73 *Inspection fees when charges for sampling have not been collected by a licensed sampler.* For each lot of processed products from which samples have been drawn by a licensed sampler, and with respect to which the sampling fee has not been collected by the licensed sampler, the fee to be charged for the inspection shall be 75 percent of the fee as prescribed in this part, plus a reasonable charge to cover the cost of sampling as may be determined by the Secretary: *Provided,* That, if the fee charged is based on the hourly rate, the fee shall be, at the rate of $4.50 per hour prescribed in this part, plus a reasonable charge to cover the cost of sampling, as determined by the Secretary.

§ 170.74 *Fee for appeal inspection.* The fee to be charged for an appeal inspection shall be at the rates prescribed in this part for other inspection services: *Provided,* That, if the result of any appeal inspection made for any applicant, other than the United States or any agency or instrumentality thereof, discloses that a material error was made in the inspection on which the appeal is made, no inspection fee shall be assessed.

§ 170.75 *Charges for micro, chemical, and certain other special analyses.* (a) The following charges shall be made for micro, chemical, and certain other special analyses which may be requested by the applicant or required by the inspector to determine the quality or condition of the processed product: [1]

Type of analysis	For first analysis	For each additional analysis
Mold count	$1.50	$1.50
Worm larvae and insect fragment count	3.00	3.00
Fly egg and maggot count	3.00	1.50
Alcohol insoluble solids	5.00	3.00
Alcohol (distillation and specific gravity)	9.00	5.00
Ascorbic acid (vitamin C)	9.00	2.00
Total ash (carbonated or sulfated)	8.00	3.00
Ash, acid insoluble	6.00	3.00
Ash, water soluble or water insoluble	6.00	3.00
Ash, NaCl free (approximate method—total ash less NaCl)	9.00	3.00
Ash, NaCl free (F_2O_3 x 2)	15.00	6.00
Catalase test	3.00	1.50
Crude fiber	12.00	6.00
Ether extract (crude fat)	9.00	5.00
Fat (acid hydrolysis)	9.00	6.00
Fiber (green and wax bean)	6.00	3.00
Iodine number	9.00	4.50
Moisture (air oven method)	3.00	3.00
Moisture (vacuum oven method)	3.00	3.00
Nitrogen or crude protein	9.00	3.00
Non-volatile ether extract	9.00	4.50
Phosphorous pentoxide (P_2O_5)	15.00	6.00
Potash (K_2O)	15.00	6.00
Phosphorous pentoxide (P_2O_5) and aluminum trioxide (Al_2O_3)	18.00	12.00
Recoverable oil	3.00	2.00
Peroxidase test (frozen vegetables)	4.50	3.00
Reducing sugars	12.00	6.00
Reducing sugars plus sucrose	18.00	12.00
Sucrose (direct polarization)	6.00	3.00
Sucrose (chemical methods)	18.00	12.00
Starch or carbohydrates (direct hydrolysis)	18.00	9.00
Sulphur dioxide (direct titration)	5.00	3.00
Sulphur dioxide (distillation method)	9.00	5.00
Sodium	13.50	4.50
Total solids (drying method)	3.00	3.00
Vanillin	12.00	9.00
Volatile and non-volatile ether extract	10.00	6.00
Water extract	5.00	5.00

[1] When any of these analyses are made at the request of an applicant and are not in connection with an inspection to determine the quality or condition of the product, the listed fees shall be increased by 30 percent.

(b) The following charges shall be made for analyses which are requested by an applicant and are not in connection with an inspection to determine the quality or condition of the product: [1]

Type of analysis	For first analysis	For each additional analysis
Brix readings (refractometric or spindle)	$3.00	$1.00
Brix readings (double dilution)	3.00	2.00
Total acidity (direct titration)	3.00	1.00
Free fatty acids	4.50	1.50
Salt (NaCl)—direct titration	4.50	1.50
Soluble solids (refractometric method)	3.00	1.00
Total solids (refractometric method)	3.00	1.00

§ 170.76 *When charges are to be based on hourly rate not otherwise provided for in this part.* When inspection is for condition only or when inspection services or related services are rendered and formal certificates are not issued or when the services rendered are such that charges based upon the foregoing sections would be inadequate or inequitable, charges may be based on the time consumed by the inspector in performance of such inspection service at the rate of $4.50 per hour.

[1] When these analyses are made in connection with an inspection to determine the quality or condition of the product no fee shall be charged for the analyses.

§ 170.77 *Fees for score sheets.* If the applicant for inspection service requests score sheets showing in detail the inspection of each container or sample inspected and listed thereon, such score sheets may be furnished by the inspector in charge of the office of inspection serving the area where the inspection was performed; and such applicant shall be charged at the rate of $2.25 for each twelve sample units, or fraction thereof, inspected and listed on such score sheets.

§ 170.78 *Fees for additional copies of inspection certificates.* Additional copies of any inspection certificate other than those provided for in § 170.29, may be supplied to any interested party upon payment of a fee of $2.25 for each set of five (5) or fewer copies.

§ 170.79 *Travel and other expenses.* Charges may be made to cover the cost of travel and other expenses incurred in connection with the performance of any inspection service, including appeal inspections: *Provided,* That, if charges for sampling or inspection are based on an hourly rate, an additional hourly charge may be made for travel time including time spent waiting for transportation as well as time spent traveling, but not to exceed eight hours of travel time for any one person for any one day: *And provided further,* That, if travel is by common carrier, no hourly charge may be made for travel time outside the employee's official work hours.

§ 170.80 *Charges for inspection service on a contract basis.* (a) Irrespective of fees and charges prescribed in foregoing sections, the Secretary may enter into contracts with applicants to perform continuous inspection services or other inspection services pursuant to the regulations in this part and other requirements as prescribed by the Secretary in such contract, and the charges for such inspection service provided in such contracts shall be on such basis as will reimburse the Bureau of Commercial Fisheries of the Department for the full cost of rendering such inspection service including an appropriate overhead charge to cover as nearly as practicable administrative overhead expenses as may be determined by the Secretary.

(b) Irrespective of fees and charges prescribed in the foregoing sections, the Secretary may enter into a written memorandum of understanding or contract, whichever may be appropriate, with any administrative agency charged with the administration of a marketing agreement or a marketing order effective pursuant to the Agricultural Marketing Agreement Act of 1937, as revised (16 U. S. C. 661 et seq.) for the making of inspections pursuant to said agreement or order on such basis as will reimburse the Bureau of Commercial Fisheries of the Department for the full cost of rendering such inspection service including an appropriate overhead charge to cover as nearly as practicable administrative overhead expenses as may be determined by the Secretary. Likewise, the Secretary may enter into a written memorandum of understanding or contract, whichever may be appropriate, with an administrative agency charged with the administration of a similar program operated pursuant to the laws of any State.

(c) No Member of, or Delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of any contract provided for in this section or to any benefit that may arise therefrom, but this provision shall not be construed to extend to such contract if made with a corporation for its general benefit, and shall not extend to any benefits that may accrue from the contract to a Member of, or Delegate to Congress, or a Resident Commissioner in his capacity as a fisherman.

MISCELLANEOUS

§ 170.86 *Approved identification—(a) Grade marks.* The approved grade mark or identification may be used on containers, labels or otherwise indicated for any processed product that (1) has been packed under continuous inspection as provided in this part to assure compliance with the requirements for wholesomeness established for the raw product and of sanitation established for the preparation and processing operations, and (2) has been certified by an inspector as meeting the requirements of such grade, quality or classification. The grade marks approved for use shall be similar in form and design to the examples in Figures 1 through 4 of this section.

Shield using red, white, and blue background or other colors appropriate for label.

FIGURE 1.

Shield with plain background.

FIGURE 2.

U. S. GRADE A

FIGURE 3.

U. S.
GRADE
B

FIGURE 4.

(b) *Inspection marks.* The approved inspection marks may be used on containers, labels or otherwise indicated for any processed product that (1) has been packed under continuous inspection as provided in this part to assure compliance with the requirements for wholesomeness established for the raw product and of sanitation established for the preparation and processing operations, and (2) has been certified by an inspector as meeting the requirements of such quality or grade classification as may be approved by the Secretary. The inspection marks approved for use shall be similar in form and design to the examples in Figures 5, 6, and 7 of this section.

Statement enclosed within a shield.

FIGURE 5.

(c) *Combined grade and inspection marks.* The grade marks set forth in paragraph (a) of this section and the inspection marks set forth in paragraph (b) of this section may be combined into a consolidated grade and inspection mark for use on processed products that have been packed under continuous inspection as provided in this part.

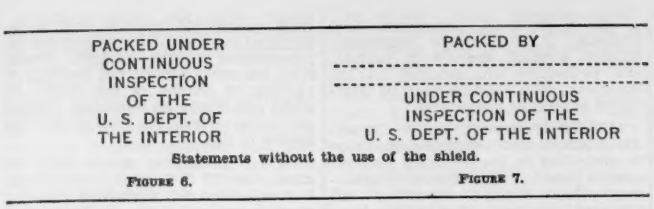
(d) *Products not eligible for approved identification.* Processed products which have not been packed under continuous inspection as provided in this part shall not be identified by approved grade or inspection marks, but such products may be inspected on a lot inspection basis as provided in this part and identified by an authorized representative of the Department by stamping the shipping cases and inspection certificate(s) covering such lot(s) with an officially drawn sample mark similar in form and design to the example in Figure 8 of this section.

FIGURE 8.

§ 170.87 *Fraud or misrepresentation.* Any or all benefits of the act may be denied any person committing wilful misrepresentation or any deceptive or fraudulent practice in connection with:

(a) The making or filing of an application for any inspection service;

(b) The submission of samples for inspection;



Statements without the use of the shield.

FIGURE 6. FIGURE 7.

(c) The use of any inspection report or any inspection certificate, or appeal inspection certificate issued under the regulations in this part;

(d) The use of the words "Packed under continuous inspection of the U. S. Department of the Interior," any legend signifying that the product has been officially inspected, any statement of grade or words of similar import in the labeling or advertising of any processed product;

(e) The use of a facsimile form which simulates in whole or in part any official U. S. certificate for the purpose of purporting to evidence the U. S. grade of any processed product; or

(f) Any wilful violation of the regulations in this part or supplementary rules or instructions issued by the Secretary.

§ 170.88 *Political activity.* All inspectors and licensed samplers are forbidden, during the period of their respective appointments or licenses, to take an active part in political management or in political campaigns. Political activities in city, county, State, or national elections, whether primary or regular, or in behalf of any party or candidate, or any measure to be voted upon, are prohibited. This applies to all appointees or licensees, including, but not limited to, temporary and cooperative employees and employees on leave of absence with or without pay. Wilful violation of this section will constitute grounds for dismissal in the case of appointees and revocation of licenses in the case of licensees.

§ 170.89 *Interfering with an inspector or licensed sampler.* Any further benefits of the act may be denied any applicant or other interested party who either personally or through an agent or representative interferes with or obstructs, by intimidation, threats, assault, or in any other manner, an inspector or licensed sampler in the performance of his duties.

§ 170.90 *Compliance with other laws.* None of the requirements in the regulations in this part shall excuse failure to comply with any Federal, State, county, or municipal laws applicable to the operation of food processing establishments and to processed food products.

§ 170.91 *Identification.* Each inspector and licensed sampler shall have in his possession at all times and present upon request, while on duty, the means of identification furnished by the Department to such person.

REQUIREMENTS FOR PLANTS OPERATING UNDER CONTINUOUS INSPECTION ON A CONTRACT BASIS [5]

[5] Compliance with the above requirements does not excuse failure to comply with all applicable sanitary rules and regulations of city, county, State, Federal, or other agencies having jurisdiction over such plants and operations.

§ 170.97 *Plant survey.* (a) Prior to the inauguration of continuous inspection service on a contract basis, the Secretary will make, or cause to be made, a survey and inspection of the plant where such service is to be performed to determine whether the plant and methods of operation are suitable and adequate for the performance of such services in accordance with:

(1) The regulations in this part, including, but not limited to, the requirements contained in §§ 170.97 through 170.103; and

(2) The terms and provisions of the contract pursuant to which the service is to be performed.

§ 170.98 *Premises.* The premises of the plant shall be free from conditions objectionable to food processing operations; and such conditions include, but are not limited to, the following:

(a) Strong offensive odors;

(b) Litter, waste, and refuse (e. g., garbage, viner refuse, and damaged containers) within the immediate vicinity of the plant buildings or structures;

(c) Excessively dusty roads, yards, or parking lots; and

(d) Poorly drained areas.

§ 170.99 *Buildings and structures.* The plant buildings and structures shall be properly constructed and maintained in a sanitary condition, including, but not being limited to, the following requirements:

(a) There shall be sufficient light (1) consistent with the use to which the particular portion of the building is devoted and (2) to permit efficient cleaning. Belts and tables on which picking, sorting, or trimming operations are carried on shall be provided with sufficient nonglaring light to insure adequacy of the respective operation.

(b) If practicable, there shall be sufficient ventilation in each room and compartment thereof to prevent excessive condensation of moisture and to insure sanitary and suitable processing and operating conditions. If such ventilation does not prevent excessive condensation, the Secretary may require that suitable facilities be provided to prevent the condensate from coming in contact with equipment used in processing operations and with any ingredient used in the manufacture or production of a processed product.

(c) There shall be an efficient waste disposal and plumbing system. All drains and gutters shall be properly installed with approved traps and vents, and shall be maintained in good repair and in proper working order.

(d) There shall be ample supply of both hot and cold water; and the water shall be of safe and sanitary quality with adequate facilities for its (1) distribution throughout the plant, and (2) protection against contamination and pollution.

(e) Roofs shall be weather-tight. The walls, ceilings, partitions, posts, doors, and other parts of all buildings and structures shall be of such materials, construction, and finish as to permit their efficient and thorough cleaning. The floors shall be constructed of tile, cement, or other equally impervious material, shall have good surface drainage, and shall be free from openings or rough surfaces which would interfere with maintaining the floors in a clean condition.

(f) Each room and each compartment in which any processed products are handled, processed, or stored (1) shall be so designed and constructed as to insure processing and operating conditions of a clean and orderly character; (2) shall be free from objectionable odors and vapors; and (3) shall be maintained in a clean and sanitary condition.

(g) Every practical precaution shall be taken to exclude dogs, cats, and vermin (including, but not being limited to, rodents and insects) from the rooms in which processed products are being prepared or handled and from any rooms in which ingredients (including, but not being limited to, salt, sugar, spices, flour, syrup, and fishery products) are handled or stored. Screens, or other devices, adequate to prevent the passage of insects shall, where practical, be provided for all outside doors and openings. The use of poisonous cleansing agents, insecticides, bactericides, or rodent poisons shall not be permitted except under such precautions and restrictions as will prevent any possibility of their contamination of the processed product.

§ 170.100 *Facilities.* Each plant shall be equipped with adequate sanitary facilities and accommodations, including, but not being limited to, the following:

(a) There shall be a sufficient number of adequately lighted toilet rooms, ample in size, and conveniently located. Such rooms shall not open directly into rooms or compartments in which processed products are being manufactured or produced, or handled. Toilet rooms shall be adequately screened and equipped with self-closing doors and shall have independent outside ventilation.

(b) Lavatory accommodations (including, but not being limited to, running water, single service towels, and soap) shall be placed at such locations in or near toilet rooms and in the manufacturing or processing rooms or compartments as may be necessary to assure the cleanliness of each person handling ingredients used in the manufacture or production of processed products.

(c) Containers intended for use as containers for processed products shall not be used for any other purpose.

(d) No product or material which creates an objectionable condition shall be processed, handled, or stored in any room, compartment, or place where any processed product is manufactured processed, or handled.

(e) Suitable facilities for cleaning (e. g., brooms, brushes, mops, clean cloths, hose, nozzles, soaps, detergent, sprayers, and steam pressure hose and guns) shall be provided at convenient locations throughout the plant.

§ 170.101 *Equipment.* All equipment used for receiving, washing, segregating, picking, processing, packaging, or storing any processed products or any ingredients used in the manufacture or production thereof, shall be of such design, material, and construction as will:

(a) Enable the examination, segregation, preparation, packaging and other processing operations applicable to processed products, in an efficient, clean, and sanitary manner, and

(b) Permit easy access to all parts to insure thorough cleaning and effective bactericidal treatment. Insofar as is practicable, all such equipment shall be made of corrosion-resistant material that will not adversely affect the processed product by chemical action or physical contact. Such equipment shall be kept in good repair and sanitary condition.

§ 170.102 *Operations and operating procedures.* (a) All operations in the receiving, transporting, holding, segregating, preparing, processing, packaging and storing of processed products and ingredients, used as aforesaid, shall be strictly in accord with clean and sanitary methods and shall be conducted as rapidly as practicable and at temperatures that will not tend to cause (1) any material increase in bacterial or other micro-organic content, or (2) any deterioration or contamination of such processed products or ingredients thereof. Mechanical adjustments or practices which may cause contamination of foods by oil, dust, paint, scale, fumes, grinding materials, decomposed food, filth, chemicals, or other foreign materials shall not be conducted during any manufacturing or processing operation.

(b) All processed products and ingredients thereof shall be subjected to continuous inspection throughout each manufacturing or processing operation. All processed products which are not manufactured or prepared in accordance with the requirements contained in §§ 170.97 through 170.103 or are not fit for human food shall be removed and segregated prior to any further processing operation.

(c) All ingredients used in the manufacture or processing of any processed product shall be clean and fit for human food.

(d) The methods and procedures employed in the receiving, segregating, handling, transporting, and processing of ingredients in the plant shall be adequate to result in a satisfactory processed product. Such methods and procedures include, but are not limited to, the following requirements:

(1) Containers, utensils, pans, and buckets used for the storage or transporting of partially processed food ingredients shall not be nested unless rewashed before each use;

(2) Containers which are used for holding partially processed food ingredients shall not be stacked in such manner as to permit contamination of the partially processed food ingredients;

(3) Packages or containers for processed products shall be clean when being filled with such products; and all reasonable precautions shall be taken to avoid soiling or contaminating the surface of any package or container liner which is, or will be, in direct contact with such products. If, to assure a satisfactory finished product, changes in methods and procedures are required by the Secretary, such changes shall be effectuated as soon as practicable.

§ 170.103 *Personnel; health.* In addition to such other requirements as may be prescribed by the Secretary with respect to persons in any room or compartment where exposed ingredients are prepared, processed, or otherwise handled, the following shall be complied with:

(a) No person affected with any communicable disease (including, but not being limited to, tuberculosis) in a transmissible stage shall be permitted;

(b) Infections or cuts shall be covered with rubber gloves or other suitable covering;

(c) Clean, suitable clothing shall be worn;

(d) Hands shall be washed immediately prior to starting work and each resumption of work after each absence from the work station;

(e) Spitting, and the use of tobacco are prohibited; and

(f) All necessary precautions shall be taken to prevent the contamination of processed products and ingredients thereof with any foreign substance (including, but not being limited to, perspiration, hair, cosmetics, and medicaments).

PART 171—UNITED STATES STANDARDS FOR GRADES OF FROZEN FRIED FISH STICKS [1]

PRODUCT DESCRIPTION AND GRADES

Sec.
171.1 Product description.
171.2 Grades of frozen fried fish sticks.

WEIGHTS AND DIMENSIONS

171.6 Recommended weights and dimensions.

FACTORS OF QUALITY

171.11 Ascertaining the grade.
171.12 Ascertaining the score for the factors which are rated.
171.13 Appearance.
171.14 Defects.
171.15 Character.

DEFINITIONS AND METHODS OF ANALYSIS

171.21 Definitions and methods of analysis.

LOT INSPECTION AND CERTIFICATION

171.25 Tolerances for certification of officially drawn samples.

SCORE SHEET

171.31 Score sheet for frozen fried fish sticks.

AUTHORITY: §§ 171.1 to 171.31 issued under sec. 205, 60 Stat. 1090, as amended; 7 U. S. C 1624.

PRODUCT DESCRIPTION AND GRADES

§ 171.1 *Product description.* Frozen fried fish sticks are clean, wholesome, rectangular-shaped portions of breaded, pre-cooked, and frozen fish flesh. The portions of fish flesh, composed primarily of large pieces, are coated with a suitable batter and breading; are cooked by frying in suitable oil or fat; and are frozen in accordance with good commercial practice and maintained at temperatures necessary for the preservation of the product. Frozen fried fish sticks contain not less than 60 percent, by weight, of fish flesh. All sticks comprising an individual package are prepared from the flesh of only one species of fish.

§ 171.2 *Grades of frozen fried fish sticks.* (a) "U. S. Grade A" is the quality of frozen fried fish sticks that possess a good flavor and odor, that possess a good appearance, that are practically free from defects, that possess a good character, and that for those factors which are rated in accordance with the scoring system outlined in this part the total score is not less than 85 points: *Provided*, That the frozen fried fish sticks may possess a reasonably good appearance and a reasonably good character if the total score is not less than 85 points.

(b) "U. S. Grade B" is the quality of frozen fried fish sticks that possess a reasonably good flavor and odor, that possess a reasonably good appearance, that are reasonably free from defects, that possess a reasonably good character, and that for those factors which are rated in accordance with the scoring system outlined in this part the total score is not less than 70 points: *Provided*, That the frozen fried fish sticks may fail to possess a reasonably good appearance and fail to possess a reasonably good character if the total score is not less than 70 points.

(c) "Substandard" is the quality of frozen fried fish sticks that fail to meet the requirements of U. S. Grade B.

WEIGHTS AND DIMENSIONS

§ 171.6 *Recommended weights and dimensions.* The recommended weights and dimensions of frozen fried fish sticks are not incorporated in the grades of the finished product since weights and dimensions, as such, are not factors of quality for the purposes of these grades. It is recommended that the largest dimension of a fish stick be at least three times that of the next largest dimension and that the average weight of the individual sticks be not less than ¾ ounce and not greater than 1¼ ounces.

FACTORS OF QUALITY

§ 171.11 *Ascertaining the grade—(a) General.* In addition to considering other requirements outlined in the standards, the following quality factors are evaluated in ascertaining the grade of the product:

(1) *Factor not rated by score points.* (i) Flavor and odor.

(2) *Factors rated by score points.* The relative importance of each factor which is rated is expressed numerically on the scale of 100. The maximum number of points that may be given such factors are:

Factors:	Points
Appearance	35
Defects	40
Character	25
Total score	100

(b) *Ascertaining of grade.* The grade of frozen fried fish sticks is ascertained by observing the product in the frozen state and after it has been heated in a suitable manner.

[1] Compliance with these standards does not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act.

(c) *Good flavor and odor.* "Good flavor and odor" means that the product has the good flavor and odor of properly prepared breaded fish sticks. The flesh portion has the good flavor and odor of properly prepared fish of the particular species. The coating has the good flavor and odor obtained when all components have been properly prepared, used, and maintained. The product is free from rancidity, bitterness, and staleness, from bacterial spoilage flavors and odors, and from off-flavors and off-odors of any kind.

(d) *Reasonably good flavor and odor.* "Reasonably good flavor and odor" means that the product may be somewhat lacking in good flavor and odor, but is free from rancidity and from objectionable bacterial spoilage flavors and odors, and from off-flavors and off-odors of any kind.

§ 171.12 *Ascertaining the score for the factors which are rated.* The essential variations within each factor which is rated are so described that the value may be ascertained for each factor and expressed numerically. The numerical range within each factor which is rated is inclusive. (For example, "21 to 25 points" means 21, 22, 23, 24, or 25 points.)

§ 171.13 *Appearance*—(a) *General.* The factor of appearance refers to the uniformity of size and shape of the frozen sticks, the color of the heated sticks, and the continuity of the coating of the product after heating.

(b) (*A*) *classification.* Frozen fried fish sticks that possess a good appearance may be given a score of 30 to 35 points. "Good appearance" means that the sticks are practically uniform in size and shape; that the product after heating possesses a practically uniform light brown to golden brown color or reddish-brown color characteristic of properly prepared frozen fried fish sticks; and that the sticks, after heating, possess a continuity of the coating not more than slightly affected by cracking or slipping.

(c) (*B*) *classification.* Frozen fried fish sticks that possess a reasonably good appearance may be given a score of 25 to 29 points. "Reasonably good appearance" means that the sticks are reasonably uniform in size and shape; that the product after heating possesses a reasonably uniform light brown to golden-brown color or reddish-brown color characteristic of properly prepared frozen fried fish sticks; and that the sticks, after heating, possess a continuity of the coating not materially affected by cracking or slipping.

(d) (*SStd.*) *classification.* Frozen fried fish sticks which fail to meet the requirements of paragraph (c) of this section may be given a score of 0 to 24 points, and shall not be graded above U. S. Grade B regardless of the total score of the product (this is a partial limiting rule).

§ 171.14 *Defects*—(a) *General.* The factor of defects refers to the degree of freedom from bones, broken sticks, damaged sticks, and from blemishes.

(1) *Bones.* "Bones" means any bones that can be identified, and are of such character as to be potentially harmful.

(2) *Broken stick.* "Broken stick" means a fish stick which is separated in two or more parts or is strained apart to the extent that it cannot be readily handled as one stick.

(3) *Damaged stick.* "Damaged stick" means a fish stick which has been crushed or otherwise mutilated to the extent that its appearance is materially affected.

(4) *Blemished.* "Blemished" means the presence (in or on the fish flesh) of blood spots, bruises, skin, protein curd spots, and objectionable dark layer fat, and (on or in the coating) of burned material, dark carbon specks, and other harmless extraneous material.

(5) *Seriously blemished.* "Seriously blemished" means blemished to the extent that the appearance is seriously affected.

(b) (*A*) *classification.* Frozen fried fish sticks that are practically free from defects may be given a score of 34 to 40 points. "Practically free from defects" means that:

(1) None of the sticks are broken;

(2) The sticks may be blemished to only a minor degree; and

(3) Not more than a total of 20 percent, by count, of the sticks may be damaged or contain bones: *Provided,* That bones may be present in not more than 10 percent, by count, of all the sticks.

(c) (*B*) *classification.* Frozen fried fish sticks that are reasonably free from defects may be given a score of 28 to 33 points. Frozen fried fish sticks that fall into this classification may not be graded above U. S. Grade B regardless of the total score for the product (this is a limiting rule). "Reasonably free from defects" means that not more than a total of 30 percent, by count, of the sticks may be defective because of bones, or are damaged sticks, broken sticks, or seriously blemished sticks: *Provided,* That

(1) Not more than 10 percent, by count, may be broken sticks;

(2) Not more than 30 percent, by count, may be damaged sticks;

(3) Not more than 20 percent, by count, of the sticks may contain bones; and

(4) Not more than 10 percent, by count, of the sticks may be seriously blemished.

(d) (*SStd.*) *classification.* Frozen fried fish sticks that fail to meet the requirements of paragraph (c) of this section may be given a score of 0 to 27 points, and may not be graded above substandard regardless of the total score for the product (this is a limiting rule).

§ 171.15 *Character*—(a) *General* The factor of character refers to the presence or absence of free oil in the package and its effect on the condition of the package; the ease of separating the frozen sticks without damaging the coating or breaking the sticks; the tendency of the sticks to remain whole and unbroken when they are heated, handled, and served in the normal manner; the degree of freedom of the breading from either an oiliness or crumbliness; the tenderness and moistness of the flesh; the consistency of the breading in the heated product; and the adherence of the coating of the heated product.

(b) (*A*) *classification.* Frozen fried fish sticks that possess a good character may be given a score of 21 to 25 points. "Good character" means that oil from the product does not more than slightly damage the package; that there may be present not more than a very small amount of loose breading in the package; that the sticks may be separated easily; that the sticks are not more than very slightly damaged by the normal handling incident to heating and serving; that no excess oil remains on the cooking utensil; that the breading is not more than slightly oily; that the flesh after heating has a good texture which is firm, tender and moist, characteristic of properly fried fish sticks for the species used; and that after heating the coating has a good crisp, tender texture not more than slightly affected by blistering or wrinkling.

(c) (*B*) *classification.* Frozen fried fish sticks that possess a reasonably good character may be given a score of 17 to 20 points. "Reasonably good character" means that oil from the product does not materially damage the package; that there may be present not more than a reasonable amount of loose breading in the package; that the sticks may be separated with only moderate damage to the coating; that the sticks are not more than moderately damaged by the normal handling incident to heating and serving; that the breading is not more than moderately oily; that the flesh after heating has a reasonably good texture which is not more than moderately tough, stringy, crumbly, mushy or spongy; and that after heating the coating has a reasonably good texture which may be not more than moderately pasty, mushy, tough, or crumbly and is not materially affected by blistering or wrinkling.

(d) (*SStd.*) *classification.* Frozen fried fish sticks that fail to meet the requirements of paragraph (c) of this section may be given a score of 0 to 16 points and shall not be graded above U. S. Grade B regardless of the total score for the product (this is a partial limiting rule).

DEFINITIONS AND METHODS OF ANALYSIS

§ 171.21 *Definitions and methods of analysis*—(a) *Percent of fish flesh.* "Percent of fish flesh" means the percent, by weight, of fish flesh in an individual package as determined by the following method:

(1) *Equipment needed.* (i) Water bath (2 to 3 liter beaker).

(ii) Balance, accurate to 0.05 gm.

(iii) Paper towels.

(iv) Spatula, small with curved tip.

(2) *Procedure.* (i) Remove from 0° F. storage and obtain the weight of each stick in the package while still in a hard frozen condition.

(ii) Place each stick individually in the water bath (maintained at 17° to 30° C.—63° to 86° F.) and allow to remain for 25 seconds. Remove from the bath; blot off lightly with double thickness paper toweling; scrape off coating with spatula; and weigh the fish flesh portion of the stick.

(iii) Calculate the percent of fish flesh in the package by the following formula:

$$\frac{\text{Total weight of fish flesh}}{\text{Total weight of frozen sticks}} \times 100 = \text{percent fish flesh.}$$

(c) *Heating in a suitable manner.* "Heating in a suitable manner" means

heating in accordance with the recommendations accompanying the product. However, if specific instructions are lacking, the product should be heated as follows:

(1) Place the product while still in the frozen state on a flat or shallow pan of sufficient size that at least 10 ounces of the product can be spread evenly on the pan with no portion of a stick closer than ¼ inch to another or to the edge of the pan.

(2) Place the pan and frozen contents in a properly ventilated oven pre-heated to 400 degrees Fahrenheit and remove when the product is thoroughly heated.

LOT INSPECTION AND CERTIFICATION

§ 171.25 *Tolerances for certification of officially drawn samples.* The grade of a lot of the processed product covered by these standards is determined by the procedures set forth in the regulations governing inspection and certification of processed fishery products, processed products thereof, and certain other processed food products (§§ 170.1 to 170.103).

SCORE SHEET

§ 171.31 *Score sheet for frozen fried fish sticks.*

Label	
Size and kind of container	
Species of fish	
Container mark or identification	
Size of lot	
Number of samples	
Net weight (ounces)	
Number of sticks per container	

Factors		Score points	
Appearance	35	(A)	30-35
		(B)	25-29
		(SStd.)	[1] 0-24
Defects	40	(A)	34-40
		(B)	[2] 26-33
		(SStd.)	[2] 0-27
Character	25	(A)	21-25
		(B)	17-20
		(SStd.)	[1] 0-16
Total score	100		

Grade	
Flavor	

[1] Indicates partial limiting rule.
[2] Indicates limiting rule.

PART 172—UNITED STATES STANDARDS FOR GRADES OF FROZEN RAW BREADED SHRIMP [1]

PRODUCT DESCRIPTION, TYPES, AND GRADES

Sec.
172.1 Product description.
172.2 Types of frozen raw breaded shrimp.
172.3 Grades of frozen raw breaded shrimp.

FACTORS OF QUALITY

172.11 Ascertaining the grade.
172.12 Factors evaluated on product in frozen state.
172.13 Factors evaluated on product in thawed debreaded state.

DEFINITIONS AND METHODS OF ANALYSIS

172.21 Definitions and methods of analysis.

LOT INSPECTION AND CERTIFICATION

172.25 Ascertaining the grade of a lot.

SCORE SHEET

172.31 Score sheet for frozen raw breaded shrimp.

[1] Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act.

AUTHORITY: §§ 172.1 to 172.31 issued under sec. 205, 60 Stat. 1090, as amended; 7 U. S. C. 1624.

PRODUCT DESCRIPTION, TYPES, AND GRADES

§ 172.1 *Product description.* Frozen raw breaded shrimp are clean, wholesome, headed, peeled, and deveined shrimp, of the regular commercial species, coated with a wholesome, suitable batter and breading. They are prepared and frozen in accordance with good commercial practice and are maintained at temperatures necessary for the preservation of the product. Frozen raw breaded shrimp contain not less than 50 percent by weight of shrimp material.

§ 172.2 *Types of frozen raw breaded shrimp*—(a) *Type I, Fantail*—(1) *Subtype A.* Split (butterfly) shrimp with the tail fin and the shell segment immediately adjacent to the tail fin.

(2) *Subtype B.* Split (butterfly) shrimp with the tail fin but free of all shell segments.

(b) *Type II, Round fantail*—(1) *Subtype A.* Round shrimp with the tail fin and the shell segment immediately adjacent to the tail fin.

(2) *Subtype B.* Round shrimp with the tail fin but free of all shell segments.

(c) *Type III, Split.* Split (butterfly) shrimp without attached tail fin or shell segments.

(d) *Type IV, Round.* Round shrimp without attached tail fin or shell segments.

§ 172.3 *Grades of frozen raw breaded shrimp.* (a) "U. S Grade A" is the quality of frozen raw breaded shrimp that when cooked possess an acceptable flavor and odor, and that for those factors which are rated in accordance with the scoring system outlined in the following sections the total score is not less than 85 points.

(b) "U. S. Grade B" is the quality of frozen raw breaded shrimp that when cooked possess an acceptable flavor and odor, and that for those factors which are rated in accordance with the scoring system outlined in the following sections the total score is not less than 70 points.

(c) "Substandard" is the quality of frozen raw breaded shrimp that fail to meet the requirements of "U. S. Grade B."

FACTORS OF QUALITY

§ 172.11 *Ascertaining the grade*—(a) *General.* In addition to considering other requirements outlined in the standards, the following quality factors are evaluated in ascertaining the grade of the product:

(b) *Factor not rated by score points: acceptability of flavor and odor.* A product with an acceptable flavor and odor is one that is free from any abnormal flavor and odor. The acceptability of flavor and odor is determined on the product after it has been cooked in a suitable manner.

(c) *Factors rated by score points.* The quality of the product with respect to factors scored is expressed numerically on the scale of 100. Weighted deductions from the maximum possible score of 100 are assessed for essential variations of quality within each factor. The score of frozen raw breaded shrimp is determined by observing the product in the frozen and thawed states.

§ 172.12 *Factors evaluated on product in frozen breaded state.* Factors affecting qualities which are measured on the product in the frozen state are: loose breading or frost; ease of separation; uniformity of size; condition of coating; and damaged or fragmented breaded shrimp. For the purpose of rating the factors which are scored in the frozen state, the schedule of point deductions in Table I applies. This schedule of point deductions is based on the examination of one complete individual package (sample unit) regardless of the net weight of the contents of the package.

§ 172.13 *Factors evaluated on product in thawed debreaded state.* Factors affecting qualities which are measured on the product in the thawed debreaded state are: degree of deterioration; dehydration; sand veins; black spot; extra shell; and swimmerets. For the purpose of rating the factors which are scored in the thawed debreaded state, the schedule of point deductions in Table II applies. This schedule of point deductions is based on the examination of 20 whole shrimp selected at random from one or more packages.

DEFINITIONS AND METHODS OF ANALYSIS

§ 172.21 *Definitions and methods of analysis*—(a) *Halo.* "Halo" means an easily recognized fringe of excess batter and breading extending beyond the shrimp flesh and adhering around the perimeter or flat edges of a split (butterfly) breaded shrimp.

(b) *Balling up.* "Balling up" means the adherence of lumps in the breading material to the surface of the breaded coating, causing the coating to appear rough, uneven, and lumpy.

(c) *Holidays.* "Holidays" means voids in the breaded coating as evidenced by bare or naked spots.

(d) *Damaged frozen raw breaded shrimp.* "Damaged frozen raw breaded shrimp" means a frozen raw breaded shrimp which has been separated into two or more parts or that has been crushed or otherwise mutilated to the extent that its appearance is materially affected.

(e) *Fragmented shrimp.* "Fragmented shrimp" means a breaded unit containing less than one headed, peeled deveined shrimp.

(f) *Black spot.* "Black spot" means any blackened area which is markedly apparent on the flesh of the shrimp.

(g) *Sand vein.* "Sand vein" means any black or dark sand vein that has not been removed, except for that portion under the shell segment adjacent to the tail fin when present.

(h) *Loose breading and frost.* "Loose breading and frost" is determined by use of a balance and by following the steps given below:

(1) Remove the overwrap.
(2) Weigh carton and all contents.
(3) Remove breaded shrimp, and weigh shrimp alone.
(4) Weigh carton less shrimp but including waxed separators (if used), crumbs and frost.
(5) Remove crumbs and frost from carton and separators.
(6) Weigh cleaned carton and separators.

(7) Calculate loose breading and frost:

$$\text{Percent loose breading and frost} = \frac{\text{weight carton less breaded shrimp material (4)} - \text{weight cleaned carton (6)}}{\text{weight of carton and all contents (4)} - \text{weight cleaned carton (6)}} \times 100$$

(i) *Percent of shrimp material.* "Percent of shrimp material" means the percent by weight of shrimp material in a sample as determined by the method described below or other methods giving equivalent result. Results are commonly expressed as percent of breading which is calculated by difference.

(1) *Equipment needed.* (i) Two-gallon container approximately nine inches in diameter;

(ii) Two vaned wooden paddle, each vane measuring approximately one and three fourths inches by three and three fourths inches;

(iii) Stirring device capable of rotating the wooden paddle at 120 rpm;

(iv) Balance accurate to 0.01 ounce (or 0.1 gram);

(v) U. S. standard sieve—ASTM—No. 20, twelve-inch diameter;

(vi) U. S. standard sieve—one-half inch sieve opening, twelve-inch diameter;

(vii) Forceps, blunt points;

(viii) Shallow baking pan.

(2) *Procedure.* (i) Weigh sample to be debreaded. Fill container three-fourths full of water at 70–80 degrees Fahrenheit. Suspend the paddle in the container leaving a clearance of at least five inches below the paddle vanes, and adjust speed to 120 rpm. Add shrimp and stir for ten minutes. Stack the sieves, the one-half inch mesh over the No. 20, and pour contents of container onto them. Set the sieves under a faucet, preferably with spray attached, and rinse shrimp with no rubbing of flesh, being careful to keep all rinsings over the sieves and not having the stream of water hit the shrimp on the sieve directly. Lay the shrimp out singly on the sieve as rinsed, remove top sieve and drain of a slope for two minutes, then remove shrimp to weighing pan. Rinse contents of the No. 20 sieve onto a flat pan and collect any particles other than breading (flesh, tail fin or extraneous material) and add to shrimp on balance pan and weigh.

(ii) Calculate percent shrimp material:

$$\text{Percent shrimp material} = \frac{\text{weight of debreaded sample}}{\text{weight of sample}} \times 100 + 1.5$$

[1] A tentative correction factor of five percent is employed pending completion of definitive studies.

(iii) Calculate percent breading:

$$\text{Percent breading} = 100 - \text{percent shrimp material.}$$

(j) *Cooked in a suitable manner.* "Cooked in a suitable manner" means cooked in accordance with the instructions accompanying the product. However, if specific instructions are lacking, the product for inspection is cooked as follows:

(1) Place the sample to be cooked while still frozen in a wire mesh deep fry basket sufficiently large to hold the shrimp in a single layer without touching each other:

TABLE I—SCHEDULE OF POINT DEDUCTIONS FOR RATING IN FROZEN BREADED STATE

Factor	Quality description	Deductions allowed
1. Loose breading or frost	Less than 2 percent by weight of product	0
	2 percent but less than 3 percent	3
	3 percent but less than 6 percent	6
	6 percent or more	10
2. Ease of separation	Separate easily immediately after opening package	0
	Separate easily after being removed from carton and exposed to room temperature for not more than 4 minutes.	4
	Separate easily after being removed from carton and exposed to room temperature for not more than 6 minutes.	6
	Does not separate easily after being removed from carton and exposed to room temperature for 6 minutes.	10
3. Uniformity	Ratio of weight of 3 largest to 3 smallest breaded shrimp in sample unit:	
	Up to 1.70	0
	1.71–1.80	1
	1.81–1.90	2
	1.91–2.00	3
	2.01–2.10	4
	2.11–2.20	5
	2.21–2.30	6
	2.31–2.40	7
	2.41–2.50	8
	2.51–2.60	9
	Over 2.60	10
4. Condition of coating	Degree of halo or balling up or holidays (identify type of defect by circling proper word):	
	No obvious	0
	Slight	1
	Moderate	3
	Marked	4
	Excessive	8
5. Damaged or fragmented breaded shrimp.	None	0
	For each unit	3
	Tail fin broken or missing per unit (except in Types III and IV)	1

(2) Lower the basket into suitable liquid oil or hydrogenated vegetable oil at 350–375 degrees Fahrenheit. Fry for three minutes, or until the shrimp attain a pleasing golden brown color; and

(3) Remove basket from oil and allow to drain for fifteen seconds. Place the cooked shrimp on a paper napkin or towel to absorb excess oil.

LOT INSPECTION AND CERTIFICATION

§ 172.25 *Ascertaining the grade of a lot.* The grade of a lot of Frozen Raw Breaded Shrimp covered by these standards is determined by the procedures set forth in the regulations governing inspection and certification of processed fishery products, processed products thereof, and certain other processed food products.

SCORE SHEET

§ 172.31 *Score sheet for frozen raw breaded shrimp.*

Size and kind of container
Container mark or identification
Label
Size of lot
Number of samples
Actual net weight (ounces)
Number of shrimp per container
Descriptive size name
Product type
Breading percentage
Loose breading percentage
Ratio weights: 3-largest/3-smallest
Ease of separation
Condition of coating
Damaged shrimp
Degree of deterioration
Dehydration
Sand veins
Black spot
Extra shell
Swimmerets
Rating for scored factors
Flavor and odor
Final grade

PART 173—UNITED STATES STANDARDS FOR GRADES OF FROZEN FISH BLOCKS [1]

PRODUCT DESCRIPTION AND GRADES

Sec.
173.1 Product description.
173.2 Grades of frozen fish blocks.

WEIGHTS AND DIMENSIONS

173.6 Recommended weights and dimensions.

FACTORS OF QUALITY

173.11 Ascertaining the grade.
173.12 Evaluation of the unscored factor of flavor and odor.
173.13 Ascertaining the rating for the factors which are scored.
173.14 Appearance.
173.15 Uniformity of size and shape.
173.16 Defects.
173.17 Character.

DEFINITIONS AND METHODS OF ANALYSIS

173.21 Definitions and methods of analysis.

LOT INSPECTION AND CERTIFICATION

173.25 Tolerances for certification of officially drawn samples.

SCORE SHEET

173.31 Score sheet for frozen fish blocks.

AUTHORITY: §§ 173.1 to 173.31 issued under sec. 205, 60 Stat. 1090, as amended; 7 U.S.C. 1624.

[1] Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act.

TABLE II—SCHEDULE FOR POINT DEDUCTIONS FOR EXAMINATION IN THAWED, DEBREADED STATE

[Subtotals brought forward]

Factor	Quality description	Deductions allowed
1. Degree of deterioration	None obvious	0
	Slight, but obvious, on average	3
	Moderate, on average	6
	Any marked—each shrimp	3
2. Dehydration	None obvious	0
	Slight but obvious, on average	3
	Moderate, on average	6
	Excessive—each shrimp	3
3. (a) Sand veins[1]	For each dark vein present deduct according to following schedule:	
	In first segment (adjacent to tail fin)	0
	Equivalent in length to 2 segments	1
	Equivalent in length to 3 segments	2
	Equivalent in length to 4 or more segments	3
(b) Black spot	None obvious	0
	Slight but obvious, on average	3
	Moderate, on average	6
	Excessive—each shrimp	3
4. (a) Extra shell[2]	(Beyond first segment adjacent to tail fin):	
	Less than one whole extra shell segment	1
	One extra segment or more	3
(b) Swimmerets	For last pair only adjacent to tail fins	1
	For more than last pair	3

[1] The deduction points assessed for sand veins and black spot occurring together on an individual shrimp shall not exceed the larger deduction for either factor.
[2] The deduction points assessed for extra shell and swimmerets occurring together on an individual shrimp shall not exceed the larger deduction for either factor.

PRODUCT DESCRIPTION AND GRADES

§ 173.1 *Product description.* Frozen fish blocks are rectangular-shaped masses of cohering frozen fish flesh of a single species consisting of adequately drained whole, wholesome, skinless fillets or pieces of whole, wholesome, skinless fillets cut into small portions but not ground or comminuted. They are frozen, but not glazed, and maintained at temperatures necessary for the preservation of the product.

§ 173.2 *Grades of frozen fish blocks.* (a) "U. S. Grade A" is the quality of frozen fish blocks that possess a good flavor and odor; and for those factors which are rated in accordance with the scoring system outlined in these standards have a total score of 85 to 100 points.

(b) "U. S. Grade B" is the quality of frozen fish blocks that possess at least a reasonably good flavor and odor; and for those factors which are rated in accordance with the scoring system outlined in these standards have a total score of 70 to 84 points: *Provided*, That no factor receives maximum point score deduction.

(c) "Substandard" is the quality of frozen fish blocks that fail to meet the requirements of U. S. Grade B.

WEIGHTS AND DIMENSIONS

§ 173.6 *Recommended weights and dimensions.* (a) The recommendations as to weights and dimensions of frozen fish blocks are not incorporated in the grades of the finished product since weights and dimensions, as such, are not factors of quality for the purpose of the grades. The degree of uniformity of size and shape among units of the finished product is rated since it is a definite factor affecting the quality of the end product prepared from the blocks.

(b) It is recommended that the thickness or depth (smallest dimension) of the frozen fish block be not greater than 10 centimeters (4.0 inches) and that the average weight be not less than 2.3 kilograms (5.0 pounds) and not greater than 22.7 kilograms (50.0 pounds).

FACTORS OF QUALITY

§ 173.11 *Ascertaining the grade*—(a) *General.* In addition to considering other requirements outlined in the standards, the following factors are evaluated in ascertaining the grade of the product:

(1) *Factors not rated by score points.* Flavor and odor.

(2) *Factors rated by score points.* The relative importance of each factor which is rated is expressed numerically on the scale of 100. The four factors and the maximum number of points that may be given each are as follows:

Factors:	*Points*
Appearance	25
Uniformity of size and shape	20
Defects	40
Character	15
Total score	100

(b) *Condition of product for evaluation.* The grade of frozen fish blocks is ascertained by observing the product in the frozen state and after representative portions have been heated in a suitable manner.

§ 173.12 *Evaluation of the unscored factor of flavor and odor*—(a) *Good flavor and odor.* "Good flavor and odor" (essential requirement for a Grade A product) means that the product has the good flavor and odor characteristic of the species of fish; and that the product is free from staleness, and from off-flavors and off-odors of any kind.

(b) *Reasonably good flavor and odor.* "Reasonably good flavor and odor" (minimum requirement of a Grade B product) means that the fish flesh may be somewhat lacking in the good flavor and odor characteristic of the species of fish; is reasonably free from rancidity; and is free from objectionable off-flavors and objectionable off-odors of any kind.

§ 173.13 *Ascertaining the score for those factors which are rated.* The essential variations within each factor which is rated are so described that the value may be ascertained for each factor and expressed numerically. Point deductions are allotted for each degree or amount of variation within each factor. The value for each factor is the maximum points allotted for the factor less the sum of the deviation deduction-points within the factor.

§ 173.14 *Appearance*—(a) *General.* The factor of appearance refers to the color of the fish flesh, and to the degree of surface dehydration of the product.

(b) For the purpose of rating the factor of appearance the schedule of deviation deduction-points in Tables I and II apply.

§ 173.15 *Uniformity of size and shape*—(a) *General.* The factor of uniformity of size and shape refers to the degree of conformity to declared dimensions and to rectangular shape.

(1) *"Angles" of a block.* There are 12 angles considered to form a block. Right angles are formed by the intersection of the four sides with the top and bottom (the two largest surfaces); and four angles are formed by the intersection of the four sides with one another. In a perfect block the surfaces form into a right angle (90 degrees).

(b) For the purpose of rating the factor of uniformity of size and shape, the schedule of deviation deduction-points in Tables III and IV apply.

TABLE IV—SCORE DEDUCTIONS FOR "ANGLES" SUBFACTOR

Number of "unacceptable" angles	Deduction points
1	0
2	1
3	2
4	3
5	4
6	6
7	8
8	10

NOTE: There are 12 angles considered to form a block. Right angles (edge) are formed by the intersection of the four sides within the top and bottom; four angles (corner) are formed by the intersection of the four sides with one another.

An "acceptable" edge angle is one in which the two surfaces forming the angles are within 1.0 cm. (⅜ inch) of the apex of a carpenter's square placed along the surfaces (use 3 readings for each edge angle measurement, 2 or 3 must meet the requirement). An "unacceptable" edge angle is one showing greater deviation than the 1.0 cm. (⅜ inch).

An "acceptable" corner angle is one in which at least one edge surface is within 1.3 cm. (½ inch) of the apex of a carpenter's square placed on the edge surfaces (use 1 reading for each corner angle). An "unacceptable" corner angle is one showing greater deviation than the 1.3 cm. (½ inch).

§ 173.16 *Defects*—(a) *General.* The factor of defects refers to the degree of freedom from damage, blemishes, improper fill, and bones.

(1) *"Damaged."* Damaged means crushed or mutilated block, and imbedding of the packaging material into the block, to the extent that the usability of that portion of the block has been adversely affected; and cut or separation of the masses of fish flesh in the block.

(2) *"Blemish."* Blemish means a piece of skin, scales, blood spot, a bruise, a black belly lining, a fin, or harmless extraneous material. One "piece of skin" consists of one piece 3.3 square centimeters (½ square inch) in area; except that skin patches larger than 9.9 square centimeters shall be considered as two

TABLE I—SCORE DEDUCTIONS FOR COLOR SUBFACTOR

Condition of the surface of the block		Deduction Points
"Light" portion of fish flesh [1]	No discoloration	0
"Dark" portion of fish flesh [2]	No discoloration	
"Light" portion of fish flesh	No discoloration	2
"Dark" portion of fish flesh	Slight yellowing	
"Light" portion of fish flesh	Slight yellowing	4
"Dark" portion of fish flesh	Moderate yellowing; no rusting	
"Light" portion of fish flesh	Moderate yellowing; slight rusting	7
"Dark" portion of fish flesh	Excessive yellowing; slight rusting	
"Light" portion of fish flesh	Excessive yellowing; moderate rusting	16
"Dark" portion of fish flesh	Excessive yellowing; moderate rusting	
"Light" portion of fish flesh	Excessive yellowing and rusting	[3] 25
"Dark" portion of fish flesh	Excessive yellowing and rusting	

[1] "Light" portion refers to fish fillet flesh comprising the main portion of the fillet.
[2] "Dark" portion refers to the dark-colored portion of the fillet appearing under the skin, the main part of which occurs along the lateral line.
[3] Fish blocks which receive 25 deduction points for this subfactor shall not be graded above Substandard regardless of the total score for the product. This is a limiting rule.

NOTE: Color of the block should be normal to that of the species of fish used. Deviations from the normal color result from oxidation or other changes that have taken place in the fish prior to freezing and after freezing and storage. Ordinarily, the type of discoloration observed is due to oxidation and results in yellowing and "rusting" of the fish surfaces.

TABLE II—SCORE DEDUCTIONS FOR "DEHYDRATION" SUBFACTOR

Condition of surface of block		Deduction points
Surface area affected	Degree of dehydration	
Percent		
Up to 50	Slight	0
Greater than 50 and up to 100	Slight	1
Greater than 0 and up to 25	Moderate	2
Greater than 25 and up to 50	Moderate	4
Greater than 0 and up to 25	Marked	
Greater than 50	Moderate	7
Greater than 25 and up to 50	Marked	
Greater than 0 and up to 25	Excessive	16
Greater than 50	Marked	
Greater than 25 and up to 50	Excessive	
Greater than 50	Excessive	[1] 25

[1] Fish blocks which receive 25 deduction points for this subfactor shall not be graded above Substandard regardless of the total score for the product. This is a limiting rule.

NOTE: Dehydration is classified in four degrees:
(a) *Slight.* Shallow and not color masking;
(b) *Moderate.* Deep but just deep enough to mask color of fish flesh;
(c) *Marked.* Deep and easily scraped off with finger nail, and masks color of flesh; and
(d) *Excessive.* Deep dehydration not easily scraped off.

TABLE III—SCORE DEDUCTIONS FOR DIMENSIONS SUBFACTOR

Deviation (+ or −) from the declared dimensions			Deduction points
Length and width	Thickness	Thickness (individual reading) [1]	
Millimeters	*Millimeters*	*Millimeters*	
Up to 3	Up to 2	4	0
Greater than 3 and up to 5	Up to 2	4	1
Greater than 3 and up to 5	Greater than 2 and up to 3	4	2
Greater than 5 and up to 8	Greater than 2 and up to 3	4	3
Greater than 5 and up to 8	Greater than 3 and up to 4	5	4
Greater than 8 and up to 12	Greater than 3 and up to 4	5	5
Greater than 5 and up to 8	Greater than 4 and up to 5	6	6
Greater than 8 and up to 12	Greater than 4 and up to 5	6	7
Greater than 8 and up to 12	Greater than 5 and up to 8	10	8
Greater than 12 and up to 16	Greater than 5 and up to 8	10	9
Greater than 8 and up to 12	Greater than 8 and up to 11	13	10
Greater than 12 and up to 16	Greater than 8 and up to 11	13	12
Greater than 12 and up to 16	Greater than 11 and up to 14	16	14
Greater than 16	Greater than 14		[2] 20

[1] These values refer to deviations of any one of the four readings taken for the thickness of the individual block from the declared thickness of the block.
[2] Fish blocks which receive 20 deduction points for this subfactor shall not be graded above Substandard regardless of the total score for the product. This is a limiting rule.

NOTE: Measurements are made in millimeters. Two readings are taken for the length; three for the width; and four for the thickness. Each group is averaged.

pieces of skin. "Blood spot" is one of such size and degree as to be considered objectionable. "Black belly lining" is any piece longer than 3 centimeters (1½-inch). "Fin" is one fin or one identifiable part of a fin. "Scales" are aggregates of one or more scales of such degree as to be considered objectionable.

(3) *"Improper fill."* Improper fill means the frozen block does not form a completely solid mass as evidenced by presence of air spaces, ice, depressions, and ragged edges (pieces of fish protrude or recede at the edges of the block).

(4) *"Bones."* Bones means any bones that can be separated from the product, can be identified, and are objectionable. One instance of bone means one bone or one group of bones occupying or contacting a circular area of 6.45 square centimeters (one square inch).

(b) For the purpose of rating the factor of defects, the schedule of deviation-deduction-points in Tables V, VI, VII, and VIII apply.

TABLE V—SCORE DEDUCTIONS FOR "DAMAGE" SUBFACTOR

Amount of damage to block	Deduction points
0 to 0.30 percent	0
For each 0.20 percent above 0.30 percent and up to 8.10 percent	1
8.11 percent and over	40

NOTE: Damage is measured by volume of the block affected. The area of damage is measured in cubic centimeters using a millimeter rule to determine the exact length, width, and thickness of the block affected. Calculate damage in "percent" using the following formula:

$$\text{Total damage in "percent" (volume/weight)} = \frac{\text{(Total damage)}}{\text{(Weight of block)}} \times 100$$

TABLE VI—SCORE DEDUCTIONS FOR "BLEMISH" SUBFACTOR

Number of blemishes per 2.3 kg. (5 lbs.) of block	Deduction points
0 to 1.0	0
1.1 to 2.0	1
2.1 to 3.0	2
3.1 to 4.0	3
4.1 to 5.0	5
5.1 to 6.0	8
6.1 to 7.0	12
7.1 to 8.0	17
8.1 to 9.0	23
9.1 to 10.0	30
10.1 or more	40

TABLE VII—SCORE DEDUCTIONS FOR "IMPROPER FILL" SUBFACTOR

Amount of "improper fill" in block [1]	Deduction points
0 to 0.30 percent	0
For each 0.20 percent above 0.30 percent and up to 8.10 percent	1
8.11 percent and over [2]	40

[1] Air spaces, ice spaces, depressions, and ragged edges.

NOTE: Improper fill is measured by the volume of the block affected. Air spaces and ice spaces are measured by filling these spaces with water or other material and measuring the volume. Spaces less than 3 ml. in volume or less than 2 mm. deep are not considered. Depressions and ragged edges are measured by exact volume of the block affected using a mm. rule to determine the length, width, and thickness of the block affected. Calculate the total "improper fill" in "percent" from the following formula:

$$\text{Total "improper fill" in "percent" (volume/weight)} = \frac{\text{(Total volume of "improper fill")}}{\text{(Weight of block)}} \times 100.$$

TABLE VIII—SCORE DEDUCTIONS FOR BONES SUBFACTOR

Instances of bone per 2.3 kg. (5.0 lb.) of fish	Deduction points
0	0
0.1 to 1.0	1
1.1 to 2.0	3
2.1 to 3.0	6
3.1 to 4.0	10
4.1 to 5.0	16
5.1 to 6.0	25
6.1 and more	40

§ 173.17 *Character*—(a) *General.* The factor of character refers to the tenderness and to the moistness of the properly heated fish flesh, and to the tendency of the pieces of fish or fillets in the block to remain as a unit when the block or portions of the block are heated.

(b) For the purpose of rating the factor of character, the schedule of deviation deduction-points in Tables IX and X apply.

DEFINITIONS AND METHODS OF ANALYSIS

§ 173.21 *Definitions and methods of analysis*—(a) *"Heating in a suitable manner."* Heating in a suitable manner means heating the product as follows:

TABLE IX—SCORE DEDUCTIONS FOR TEXTURE SUBFACTOR

Texture condition of the cooked fish	Deduction points
Firm; slightly resilient but not tough or rubbery; moist but not mushy	0
Moderately firm; only slightly tough or rubbery; does not form a fibrous mass in the mouth; moist, but not mushy	2
Moderately tough or rubbery; has noticeable tendency to form a fibrous mass in the mouth; or is dry; or is mushy	5
Tough or rubbery; has marked tendency to form fibrous mass in the mouth; or is very dry; or is very mushy	7
Objectionably tough, rubbery, dry or mushy	[1] 15

[1] Fish blocks which receive 15 deduction points for this subfactor shall not be graded above Substandard regardless of the total score for the product. This is a limiting rule.

TABLE X—SCORE DEDUCTIONS FOR COHESION SUBFACTOR

Cohesion condition of the cooked fish	Deduction points
	Points
The pieces comprising the cooked sample cohere very tightly. They can be separated only by significant tearing of the flesh	0
The pieces comprising the cooked sample cohere fairly tightly and they can be separated only by moderate tearing of the flesh	1
The pieces comprising the cooked sample cohere slightly. They can be separated easily with slight or no tearing of the flesh	3
The pieces comprising the cooked sample show no tendency to cohere. They can be separated very easily	6

(1) Cut three or more portions about four by three by one-half inches from a frozen block. Wrap individually or in single layer in aluminum foil. Place packaged portions on a wire rack suspended over boiling water in a covered container. Steam the packaged portions until the product is thoroughly heated, or

(2) Cut and package the portions as described in subparagraph (1) of this paragraph. Place the packaged portions on a flat cookie sheet or shallow flat-bottom pan of sufficient size so that the packages can be spread evenly on the sheet or pan. Place pan and frozen contents in a properly ventilated oven heated to 400 degrees Fahrenheit and remove when the product is thoroughly heated.

LOT INSPECTION AND CERTIFICATION

§ 173.25 *Tolerances for certification of officially drawn samples.* The sample rate and grades of specific lots shall be certified on the basis of the regulations governing inspection and certification of processed fishery products, processed products thereof, and certain other processed food products.

SCORE SHEET

§ 173.31 *Score sheet for frozen fish blocks.*

Label.....
Size and kind of container.....
Container mark or identification.....
Size of lot.....
Number of blocks per master carton.....
Size of sample.....
Species of fish declared.....
Actual net weight.....(kg.).....(lb.)

Factor	Standards score points	Sample Score
Appearance	25	
Uniformity	20	
Defects	40	
Character	15	
Total	100	

Flavor and odor.....
Final grade.....

Note: Also see Commercial Fisheries Review, July 1958, p. 72; June 1958, p. 81; May 1958, p. 72; April 1958, p. 76; March 1958, p. 58; February 1958, p. 82; January 1958, p. 103; October 1957, p. 7; and June 1957, p. 65.

Department of State

UNITED STATES REPEATS PROTEST OF RUSSIAN CLAIM THAT PETER THE GREAT BAY IS INTERNAL WATERS:

The designation on the part of the U. S. S. R. of Peter the Great Bay as internal waters was protested for the second time in a note dated March 6, 1958, delivered to the Soviet Ministry of Foreign Affairs by the United States Embassy in Moscow. The Soviets in a note dated January 7, 1958, in answer to United States' first protest made on August 12, 1957, reiterated their claim that waters of Peter the Great Bay are historical waters of the Soviet Union. The text of the second United States note follows:

"The Embassy of the United States of America presents its compliments to the Ministry of Foreign Affairs of the Union of Soviet Socialist Republics and, on instructions from its Government, has the honor to refer to the Ministry's Note No. 2/OSA of January 7, 1958."

"As was made clear in this Embassy's Note No. 147 of August 12, 1957, under international law the Government of the United States cannot regard the body of water enclosed by a line drawn between the estuary of the River Tyumen-Ula and the Povorotny promontory as constituting, either geographically or historically, a part of the internal waters of the Union of Soviet Socialist Republics. The configuration of the coast in the area of Peter the Great Bay is not such that that body of water could in any way be regarded as being comprised of landlocked waters which could properly be considered internal waters of the Soviet Union. Encroachments on the high seas are of concern to the entire world and neither internal regulations of the Russian Government, which were not communicated to the Governments of other States, nor fishing agreements between the Union of Soviet Socialist Republics and Japan could be sufficient to establish the degree of acceptance on the part of the rest of the world that would be necessary to justify the Government of the Union of Soviet Socialist Republics in claiming that the body of water referred to above constitutes internal waters of the Soviet Union either as an historic bay or under any other principle of international law. Moreover, the Government of the United States notes that the Government of Japan does not agree with the interpretation of the Government of the Union of Soviet Socialist Republics of the fishing

agreements of 1928 and 1944, to which the Ministry of Foreign Affairs referred in its Note No. 2/OSA."

"The Government of the United States must therefore, continue to regard any measures to effectuate the degree of the Council of Ministers, regarding the boundary of internal waters in the area of Peter the Great Bay, as violative of the fundamental principles of international law, and reserves its right to take such action as it deems necessary to protect each and all of its rights in that area." (Department of State Bulletin, March 24, 1958.)

Treasury Department

BUREAU OF CUSTOMS

CUSTOMS RESTRICTION ON OBTAINING DATA FROM VESSELS' MANIFESTS LIBERALIZED:

A recent change in Customs regulations liberalizes the amount of data which can be obtained from vessels' manifests and summary statistical reports of imports and exports for publication or other legitimate public use. The only restriction is that the names of the consignee may be withheld upon application. All other data of a general nature and of statistical value to the public is now made available on a current basis to accredited representatives of the press, including newspapers, commercial magazines, trade journals, and similar publications.

Formerly, upon written application of an importer, exporter, or master or owner of a vessel, information contained in the manifest could be withheld upon application if supported by evidence that publication of such data had been or would be detrimental to the applicant.

Customs officials felt that in the interest of providing the public through accredited representatives with a maximum of current data relating to imports and exports consistent with the necessary protection to private business relationships, the dissemination of such current data should be limited to the withholding, upon application, of the names of consignees of imports only.

Customs Regulations on restriction of manifest information as amended appeared in the May 13 Federal Register as follows:

TITLE 19—CUSTOMS DUTIES

Chapter I—Bureau of Customs, Department of the Treasury

[T. D. 54585]

PART 26—DISCLOSURE OF INFORMATION

RESTRICTION ON MANIFEST INFORMATION

Certain commercial data relating to imports and exports is made available on a current basis to accredited representatives of the press under the terms and conditions set forth in §§ 26.5, 26.6, and 26.7 of the Customs Regulations. Section 26.7 provides in part that upon receipt of a written application of an importer, exporter, or master or owner of any vessel, the information identified in § 26.5 will be withheld if the application is supported by evidence that the publication of such data has been or will be detrimental to the applicant.

In the interest of providing the public, through accredited representatives of the press and associations designated in § 26.5, with a maximum of current data relating to imports and exports consistent with the necessary protection to private business relationships, it has now been decided that the restrictions provided for in § 26.7 (a) upon dissemination of such current data should be limited to the withholding, upon application, of the names of consignees of imports. The disclosure of other data identified in § 26.5, which data is of a general nature but of considerable statistical value to the public, should not be restricted. Therefore, § 26.7 (a) of the Customs Regulations is amended to read as follows:

(a) Upon written application of a consignee or importer, the collector of customs shall refuse to permit any person, except as provided in § 26.4, to copy the name of such consignee from manifests.

(R. S. 161, 251, sec. 624, 46 Stat. 759, sec. 3, 60 Stat. 238, 5 U. S. C. 22, 1002, 19 U. S. C. 66, 1624)

Notice of the proposed issuance of the foregoing amendment was published in the FEDERAL REGISTER on October 5, 1957 (22 F. R. 7942). Due consideration was accorded to all data, views, and arguments received pertaining to the proposed amendment, none of which was found to warrant any change. However, some minor changes in terminology have been made to conform to related provisions in § 26.5 (c).

This amendment terminates suspensions of disclosure heretofore granted by collectors of customs. However, to reduce administrative problems for collectors of customs and to make it unnecessary for reapplication by those importers who had previously obtained suspensions of disclosure of data or whose applications have not yet been acted on, any applications by importers which have been previously granted or have not been acted on shall remain in effect or be granted, respectively, only as to the disclosure of the consignee's name.

(R. S. 161; 5 U. S. C. 22. Interprets or applies R. S. 251, sec. 624, 46 Stat. 759, sec. 3, 60 Stat. 238; 5 U. S. C. 1002, 19 U. S. C. 66, 1624)

[SEAL] RALPH KELLY,
Commissioner of Customs.

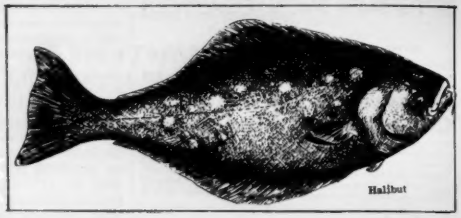
Approved: May 2, 1958.

A. GILMORE FLUES,
Acting Secretary of the Treasury.

White House

PACIFIC HALIBUT
FISHERY REGULATIONS FOR 1958
APPROVED BY THE UNITED STATES:

The Pacific halibut fishery regulations for 1958 as issued by the International Pacific Halibut Commission were approved by the President of the United States on March 28. The regulations as approved appeared in the April 3 Federal Register and were as follows:


Halibut

TITLE 50—WILDLIFE

Chapter III—International Regulatory Agencies (Fishing and Whaling)

[Departmental Reg. 108.359]

PART 301—PACIFIC HALIBUT FISHERIES

Regulations of the International Pacific Halibut Commission adopted pursuant to the Pacific Halibut Fishery Convention between the United States of America and Canada, signed March 2, 1953.

Sec.

301.1 Regulatory areas.
301.2 Length of halibut fishing seasons.
301.3 Closed seasons.
301.4 Catch limits in Areas 2 and 3A.
301.5 Size limits.
301.6 Licensing of vessels.
301.7 Retention of halibut taken under permit.
301.8 Conditions limiting validity of permits.
301.9 Statistical return by vessels.
301.10 Statistical return by dealers.
301.11 Closed nursery grounds.
301.12 Dory gear prohibited.
301.13 Nets prohibited.
301.14 Retention of tagged halibut.
301.15 Responsibility of master.
301.16 Supervision of unloading and weighing.
301.17 Previous regulations superseded.

AUTHORITY: §§ 301.1 to 301.17 issued under Art. III, 50 Stat., Part II, 1353.

§ 301.1 *Regulatory areas.* (a) Convention waters which include the territorial waters and the high seas off the western coasts of Canada and the United States of America including the southern as well as the western coasts of Alaska shall be divided into the following areas, all directions given being magnetic unless otherwise stated.

(b) Area 1A (South of Heceta Head) shall include all convention waters southeast of a line running northeast and southwest through Heceta Head Light, as shown on Chart 5802, published in July, 1947, by the United States Coast and Geodetic Survey, which light is approximately latitude 44°08'18" N., longitude 124°07'36" W.

(c) Area 1B (Heceta Head to Willapa Bay) shall include all convention waters between Area 1A and a line running northeast and southwest through Willapa Bay Light on Cape Shoalwater, as shown on Chart 6185, published in July, 1939, by the United States Coast and Geodetic Survey, which light is approximately latitude 46°43'17" N., longitude 124°04'15" W.

(d) Area 2 (Willapa Bay to Cape Spencer) shall include all convention waters off the coasts of the United States of America and of Alaska and of Canada between Area 1B and a line running through the most westerly point of Glacier Bay, Alaska, to Cape Spencer Light as shown on Chart 8304, published in June, 1940, by the United States Coast and Geodetic Survey, which light is approximately latitude 58°11'57" N., longitude 136°38'18" W., thence south one-quarter east and except in the year 1958 is exclusive of the nursery areas closed, except in the year 1958, to all halibut fishing in § 301.11.

(e) Area 3A (Cape Spencer to Shumagin Islands) shall include all the convention waters off the coast of Alaska that are between Area 2 and a straight line running southeast one-half east from the highest point on Kupreanof Point, which highest point is approximately latitude 55°34'08" N., longitude 159°36'00" W.; the highest point on Kupreanof Point shall be determined from Chart 8859 as published May, 1954 (2d Edition) by the United States Coast and Geodetic Survey, Washington, D. C.

(f) Area 3B (West of Shumagin Islands including Bering Sea) shall include all the convention waters off the coast of Alaska which are not included in Area 3A or in Area 2 or in the nursery area described in paragraph (b) of § 301.11.

§ 301.2 *Length of halibut fishing seasons.* (a) In Area 1A, the halibut fishing season shall commence at 6:00 a. m. of the 4th day of May and terminate at 6:00 a. m. of the 16th day of October, or at the time of termination of the halibut fishing season in Area 3A, whichever is later.

(b) In Area 1B, the halibut fishing seasons shall commence and terminate at the same times as the halibut fishing seasons in Area 2 shall commence and terminate.

(c) In Area 2, except as provided in paragraph (d) of this section, there shall be two halibut fishing seasons: the first season commencing at 6:00 a. m. on the 4th day of May and terminating at 6:00 a. m. on a date to be determined and announced under paragraph (b) of § 301.4; the second season commencing at 6:00 a. m. on the 31st day of August and terminating at 6:00 a. m. on the 7th day of September.

(d) During the second halibut fishing season in Area 2, provided in paragraph (c) of this section, the Cape Scott-Goose Islands area shall be closed to halibut fishing and no person shall fish for halibut in said closed area or shall have halibut in his possession while fishing for other species therein or shall have halibut of any origin in his possession therein excepting in the course of a continuous transit across said closed area. The boundaries of said area, stated in terms of the magnetic compass, are: from Bush Point on Don Peninsula, approximately latitude 52°15'38" N., longitude 128°18'54" W., to McInnis Island Light on McInnis Island, approximately latitude 52°15'48" N., longitude 128°43'22" W.; thence southwest by south one-quarter south approximately ninety-five miles to a point approximately latitude 51°24'00" N., longitude 130°48'00" W.; thence approximately eighty-one and one-half miles southeast by east one-quarter east to a point approximately latitude 50°17'10" N., longitude 129°36'00" W.; thence approximately fifty-four miles northeast by north one-quarter north to Cape Scott Light on Vancouver Island, approximately latitude 50°47'13" N., longitude 128°25'50" W.; thence along the eastern shore of Vancouver Island to Dillon Point, approximately one mile southeast of Masterman Island Light, approximately latitude 50°44'50" N., longitude 127°24'22" W.; thence to Tomlinson Point at the easterly entrance of Blunden Harbor on the mainland, approximately latitude 50°54'10" N., longitude 127°15'24" W.; thence along the mainland shore to the point of origin at Bush Point. The points on Bush Point and McInnis Island shall be determined from Chart 328, as published July 1930 by the Canadian Hydrographic Service, Department of Marine, Ottawa; the points on Cape Scott, Dillon Point and Tomlinson Point shall be determined from Charts 3593, 3572 and 3574 respectively as published May 1955, June 1956 and March 1956 respectively, by the Canadian Hydrographic Service, Surveys and Mapping Branch, Department of Mines and Technical Surveys, Ottawa, provided that the duly authorized officers of Canada may at any time place a plainly visible mark or marks at any point or points as nearly as practicable on the boundary line defined herein, and such marks shall thereafter be considered as correctly defining said boundary.

(e) In Area 3A, the halibut fishing season shall commence at 6:00 a. m. of the 4th day of May and terminate at 6:00 a. m. on a date to be determined and announced under paragraph (b) of § 301.4.

(f) In Area 3B, the halibut fishing season shall commence at 6:00 a. m. of the 1st day of April and terminate at 6:00 a. m. of the 16th day of October, or at the time of termination of the halibut fishing season in Area 3A, whichever is later.

(g) All hours of opening and closing of areas in this section and other sections of this part shall be Pacific Standard Time.

§ 301.3 *Closed seasons.* (a) Under paragraph 1 of Article I of the Convention, all convention waters shall be closed to halibut fishing except as provided in § 301.2.

(b) All convention waters, if not already closed under other provisions of the regulations in this part, shall be closed to halibut fishing at 6:00 a. m. of the 1st day of December and shall remain closed until reopened as provided in § 301.2, and the retention and landing of any halibut caught during this closed period shall be prohibited.

(c) Nothing contained in this part shall prohibit the fishing for species of fish other than halibut or prohibit the International Pacific Halibut Commission, hereafter in the regulations in this part referred to as "the Commission", from conducting or authorizing fishing operations for investigation purposes as provided for in paragraph 3 of Article I of the Convention.

§ 301.4 *Catch limits in Areas 2 and 3A.* (a) The quantity of halibut to be taken during the first halibut fishing season in Area 2 and during the halibut fishing season in Area 3A in 1958 shall be limited to 26,500,000 pounds and 30,000,000 pounds respectively of salable halibut, the weights in each limit to be computed as with heads off and entrails removed.

(b) The Commission shall as early in the said year as is practicable determine and announce the date on which it deems each limit of catch defined in paragraph (a) of this section will be attained, and the limit of each such catch shall then be that which shall be taken prior to said date, and fishing for halibut in the area to which each limit applies shall at that date be prohibited until each area is reopened to halibut fishing as provided in § 301.2, and provided that if it shall at any time become evident to the Commission that the limit will not be reached by such date, it may substitute another date.

(c) Catch limits shall apply only to the first halibut fishing season in Area 2 and to the single halibut fishing season in Area 3A.

§ 301.5 *Size limits.* The catch of halibut to be taken from all areas shall be limited to halibut which with head on are 26 inches or more in length as measured from the tip of the lower jaw to the extreme end of the middle of the tail or to halibut which with the head off and entrails removed are 5 pounds or more in weight, and the possession of any halibut of less than the above length, or the above weight, according to whether the head is on or off, by any vessel or by any master or operator of any vessel or by any person, firm or corporation, is prohibited.

§ 301.6 *Licensing of vessels.* (a) All vessels of any tonnage which shall fish for halibut in any manner or hold halibut in possession in any area, or which shall transport halibut otherwise than as a common carrier documented by the Government of the United States or of Canada for the carriage of freight, must be licensed by the Commission, provided that vessels of less than five net tons or vessels which do not use set lines need not be licensed unless they shall require a permit as provided in § 301.7.

(b) Each vessel licensed by the Commission shall carry on board at all times while at sea the halibut license thus secured whether it is validated for halibut fishing or endorsed with a permit as provided in § 301.8 and this license shall at all times be subject to inspection by authorized officers of the Governments of Canada or the United States or by representatives of the Commission.

(c) The halibut license shall be issued without fee by the customs officers of the Governments of Canada or the United States or by representatives of the Commission or by fishery officers of the Governments of Canada or the United States at places where there are neither customs officers nor representatives of the Commission. A new license may be issued by the officer accepting statistical return at any time to vessels which have furnished proof of loss of the license form previously issued, or when there shall be no further space for record thereon, providing the receipt of statistical return shall be shown on the new form for any halibut or other species taken during or after the voyage upon which loss occurred.

(d) The halibut license of any vessel shall be validated before departure from port for each halibut fishing operation for which statistical return is required. This validation of a license shall be by customs officers or by fishery officers of the Governments of Canada or the United States when available at places where there are no customs officers and shall not be made unless the area in which the vessel will fish is entered on the license form and unless the provisions of § 301.9 have been complied with for all landings and all fishing operations since issue of the license, provided that if the master or operator of any vessel shall fail to comply with the provisions of § 301.9, the halibut license of such vessel may be validated by customs officers or by fishery officers upon evidence either that there has been a judicial determination of the offense or that the laws prescribing penalties therefor have been complied with, or that the said master or operator is no longer responsible for, nor sharing in, the operations of said vessel.

(e) The halibut license of any vessel fishing for halibut in Area 1A as defined in § 301.1 must be validated at a port or place within Area 1A prior to each such fishing operation during the second halibut fishing season in Areas 1B and 2 as defined in paragraphs (b) and (c) of § 301.2 and when Areas 1B and 2 are closed to halibut fishing.

(f) The halibut license of any vessel fishing for halibut in Area 3B when Area 3A is closed to halibut fishing must be validated at a port or place within Area 3B prior to such fishing, except that a vessel already fishing in Area 3B with a halibut license that was validated for halibut fishing in Area 3B or in Areas 3A and 3B prior to the date of closure of Area 3A, may continue to fish in Area 3B until first entry at a port or place with a validating officer or until any halibut is unloaded.

(g) The halibut license of any vessel departing from Area 3B with any halibut on board when Area 3A is closed to halibut fishing, must be validated at a port or place in Area 3B subsequent to fishing and prior to such departure.

(h) A halibut license shall not be validated for departure for halibut fishing in Areas 1A or 1B or 2 more than 48 hours prior to the commencement of any halibut fishing season in said areas; nor for departure for halibut fishing in Areas 3A or 3B from any port or place inside said areas more than 48 hours prior to the commencement of the halibut fishing season in said areas; nor for departure for halibut fishing in Areas 3A or 3B from any port or place outside said areas more than 5 days prior to the commencement of the halibut fishing season in said areas.

(i) A halibut license shall not be valid for halibut fishing in more than one of Areas 1A, 1B, 2 or 3A, as defined in § 301.1, during any one trip nor shall it be revalidated for halibut fishing in another of said areas while the vessel has any halibut on board.

(j) A halibut license shall not be valid for halibut fishing in any area closed to halibut fishing nor for the possession of halibut in any area closed to halibut fishing except while in actual transit to or within a port of sale and as provided in paragraph (m) of this section.

(k) Any vessel which is not required to be licensed for halibut fishing under paragraph (a) of this section shall not possess any halibut of any origin in any area closed to halibut fishing except while in actual transit to or within a port of sale.

(l) A halibut license shall not be valid for halibut fishing in any area while a permit endorsed thereon is in effect, nor shall it be validated while halibut taken under such permit is on board.

(m) A halibut license when validated for halibut fishing in Area 3A shall not be valid for the possession of any halibut in Area 2 if said vessel is in possession of baited gear more than 25 miles from Cape Spencer Light, Alaska; and a halibut license when validated for halibut fishing in Area 3B shall not be valid for the possession of any halibut in Area 3A, when Area 3A is closed to halibut fishing, if said vessel is in possession of baited gear more than 20 miles by navigable water route from the boundary between Areas 3A and 3B.

(n) No person on any vessel which is required to have a halibut license under paragraph (a) of this section shall fish for halibut or have halibut in his possession, unless said vessel has a valid license issued and in force in conformity with the provisions of this section.

§ 301.7 *Retention of halibut taken under permit.* (a) There may be retained for sale on any vessel which shall have a permit as provided in § 301.8 such halibut as is caught incidentally to fishing by that vessel in any area after it has been closed to halibut fishing under § 301.2 or § 301.4 with set lines (of the type commonly used in the Pacific Coast halibut fishery) for other species, not to exceed at any time one pound of halibut for each seven pounds of salable fish, actually utilized, of other species not including salmon or tuna, and such halibut may be sold as the catch of said vessel, the weight of all fish to be computed as with heads off and entrails removed: *Provided*, That it shall not be a violation of this regula-

tion for any such vessel to have in possession halibut in addition to the amount herein allowed to be sold if such additional halibut shall not exceed thirty percent of such amount and shall be forfeited and surrendered at the time of landing as provided in paragraph (e) of this section.

(b) There may be retained for sale on any vessel which shall have a permit as provided in § 301.8 such halibut as is caught incidentally to fishing for species of crab by that vessel in that part of Area 3B known as Bering Sea after 6:00 a. m. of the 1st day of April of the year 1958 with bottom trawl nets (of the type commonly used in the Bering Sea king crab fishery) whose cod ends or fish bags shall consist of webbing whose dry-stretched mesh shall measure not less than 12 inches between knots or hog rings, not to exceed at any time one pound of halibut for each five pounds drained weight of salable picked crab meat or the equivalent drained weight of crab meat in the shell or in vacuum-packed heat processed containers. The equivalent weight of meat in the shell shall be computed on the basis of 15 pounds of meat in the shell being equal to 6 pounds of drained picked crab meat and the equivalent weight of processed meat shall be computed on the basis of 6½ ounces of drained weight of processed crab being equal to 8 ounces of picked crab meat.

(c) Halibut retained under such permit shall not be filleted, flitched, steaked or butchered beyond the removal of the head and entrails while on the catching vessel.

(d) Halibut retained under such permit shall not be landed or otherwise removed or be received by any person, firm or corporation from the catching vessel until all halibut on board shall have been reported to a customs, fishery or other authorized enforcement officer of the Governments of Canada or the United States by the captain or operator of said vessel and also by the person, firm or corporation receiving the halibut, and no halibut or other fish or crabs shall be landed or removed or be received from the catching vessel, except with the permission of said officer and under such supervision as the said officer may deem advisable.

(e) Halibut retained under such permit shall not be purchased or held in possession by any person other than the master, operator or crew of the catching vessel in excess of the proportion allowed in paragraph (a) of this section until such excess, whatever its origin, shall have been forfeited and surrendered to the customs, fishery or other authorized officers of the Governments of Canada or the United States. In forfeiting such excess, the vessel shall be permitted to surrender any part of its catch of halibut, provided that the amount retained shall not exceed the proportion herein allowed.

(f) Permits for the retention and landing of halibut caught in Areas 1A, 1B, 2, 3A or 3B, exclusive of that part known as Bering Sea, in the year 1958 shall become invalid at 6:00 a. m. of the 16th day of November of said year or at such earlier date as the Commission shall determine.

(g) Permits shall become invalid for the retention of halibut caught in that part of Area 3B known as Bering Sea after 6:00 a. m. of the 15th day of November in the year 1958 and shall become invalid for the landing of halibut caught under permit in that part of Area 3B known as Bering Sea after 6:00 a. m. of the 15th day of December of the year 1958 or at such earlier dates as the Commission shall determine.

§ 301.8 *Conditions limiting validity of permits.* (a) Any vessel which shall be used in fishing for other species than halibut in any area after it has been closed to halibut fishing under § 301.2 or § 301.4 must have a halibut license and a permit if it shall retain, land or sell any halibut caught incidentally to such fishing or possess any halibut of any origin during such fishing, as provided in § 301.7.

(b) The permit shall be shown by endorsement of the issuing officer on the face of the halibut license form held by said vessel and shall show the area or areas for which the permit is issued.

(c) The permit shall terminate at the time of the first landing thereafter of fish or crabs of any species and a new permit shall be secured before any subsequent fishing operation for which a permit is required.

(d) A permit shall not be issued to any vessel which shall have halibut on board taken while said vessel was licensed to fish in an open area unless such halibut shall be considered as taken under the issued permit and shall thereby be subject to forfeiture when landed if in excess of the proportion permitted in paragraph (a) or (b) of § 301.7.

(e) A permit shall not be issued to, or be valid if held by, any vessel which shall fish with other than set lines of the type commonly used in the Pacific Coast halibut fishery except in that part of Area 3B known as Bering Sea as provided in paragraph (b) of § 301.7.

(f) The permit of any vessel shall not be valid unless the permit is granted before departure from port for each fishing operation for which statistical returns are required. This granting of a permit shall be by customs officers or by fishery officers of the Governments of Canada or the United States when available at places where there are no customs officers and shall not be made unless the area or areas in which the vessel will fish is entered on the halibut license form and unless the provisions of § 301.9 have been complied with for all landings and all fishing operations since issue of the license or permit, provided that if the master or operator of any vessel shall fail to comply with the provisions of § 301.9, the permit of such vessel may be granted by customs or fishery officers upon evidence either that there has been a judicial determination of the offense or that the laws prescribing penalties therefor have been complied with, or that the said master or operator is no longer responsible for, nor sharing in, the operations of said vessel.

(g) A permit shall not be valid for the landing of halibut caught incidentally to fishing for crabs in that part of Area 3B known as Bering Sea unless the vessel shall show documentary evidence of date of departure from some port or place within said area, or from Akutan, Alaska, subsequent to such fishing. Such documentary evidence may consist of a certified written statement of a properly identified and responsible resident within that part of Area 3B known as Bering Sea or at Akutan.

(h) The permit of any vessel shall not be valid if said vessel shall have in its possession at any time halibut in excess of the amount allowed under paragraph (a) or (b) of § 301.7.

(i) No person shall retain, land or sell any halibut caught incidentally to fishing for other species in any area closed to halibut fishing under § 301.2 or § 301.4, or shall have halibut of any origin in his possession during such fishing, unless such person is a member of the crew of and is upon a vessel with a halibut license and with a valid permit issued and in force in conformity with the provisions of §§ 301.7 and 301.8.

§ 301.9 *Statistical return by vessels.* (a) Statistical return as to the amount of halibut taken during fishing operations must be made by the master or operator of any vessel licensed under the regulations in this part and as to the amount of halibut and other species by the master or operator of any vessel operating under permit as provided for in §§ 301.7 and 301.8, within 96 hours of landing, sale or transfer of halibut or of first entry thereafter into a port where there is an officer authorized to receive such return.

(b) The statistical return must state the port of landing and the amount of each species taken within the area or areas defined in the regulations in this part, for which the vessel's license is validated for halibut fishing or within the area or areas for which the vessel's license is endorsed as a permit.

(c) The statistical return must include all halibut landed or transferred to other vessels and all halibut held in possession on board and must be full, true and correct in all respects herein required.

(d) The master or operator or any person engaged on shares in the operation of any vessel licensed or holding a permit under the regulations in this part may be required by the Commission or by any officer of the Governments of Canada or the United States authorized to receive such return to certify to its correctness to the best of his information and belief and to support the certificate by a sworn statement. Validation of a halibut license or issuance of a permit after such sworn return is made shall be provisional and shall not render the license or permit valid in case the return shall later be shown to be false or fraudulently made.

(e) The master or operator of any vessel holding a license or permit under the regulations in this part shall keep an accurate log of all fishing operations including therein date, locality, amount of gear used, and amount of halibut taken daily in each such locality. This log record shall be open to inspection by representatives of the Commission authorized for this purpose.

(f) The master, operator or any other person engaged on shares in the operation of any vessel licensed under the regulations in this part may be required by the Commission or by any officer of the Governments of Canada or the United States to certify to the correctness of such log record to the best of his

information and belief and to support the certificate by a sworn statement.

§ 301.10 *Statistical return by dealers.* (a) All persons, firms or corporations that shall buy halibut or receive halibut for any purpose from fishing or transporting vessels or other carrier shall keep and on request furnish to customs officers or to any enforcing officer of the Governments of Canada or the United States or to representatives of the Commission, records of each purchase or receipt of halibut, showing date, locality, name of vessel, person, firm or corporation purchased or received from and the amount in pounds according to trade categories of the halibut and other species landed with the halibut.

(b) All persons, firms or corporations receiving fish from a vessel fishing under permit as provided in § 301.7 shall within 48 hours make to an authorized enforcement officer of the Governments of Canada or the United States a signed statistical return showing the date, locality, name of vessel received from and the amount of halibut and of other species landed with the halibut and certifying that permission to receive such fish was secured in accordance with paragraph (d) of § 301.7. Such persons, firms or corporations may be required by any officer of the Governments of Canada or the United States to support the accuracy of the above signed statistical return with a sworn statement.

(c) All records of all persons, firms or corporations concerning the landing, purchase, receipt and sale of halibut and other species landed therewith shall be open at all times to inspection by any enforcement officer of the Governments of Canada or the United States or by any authorized representative of the Commission. Such persons, firms or corporations may be required to certify to the correctness of such records and to support the certificate by a sworn statement.

(d) The possession by any person, firm or corporation of halibut which such person, firm or corporation knows to have been taken by a vessel without a valid halibut license or a vessel without a permit when such license or permit is required, is prohibited.

(e) No person, firm or corporation shall unload any halibut from any vessel that has fished for halibut in Area 3B after the closure of Area 3A unless the license of said vessel has been validated at a port or place in Area 3B as required in paragraphs (f) and (g) of § 301.6 or unless permission to unload such halibut has been secured from an enforcement officer of the Governments of Canada or the United States.

§ 301.11 *Closed nursery grounds.* (a) The following areas have been found to be populated by small, immature halibut and are designated as nursery grounds and except in the year 1958 are closed to halibut fishing, and, except in the year 1958, no person shall fish for halibut in either of such areas, or shall have halibut in his possession while fishing for other species therein, or shall have halibut of any origin in his possession therein except in the course of a continuous transit across such area, or during continuous transit through such area for landing at the Port of Masset, Q. C. I.

(b) First, that area in the waters off the coast of Alaska within the following boundary as stated in terms of the magnetic compass unless otherwise indicated: from the north extremity of Cape Ulitka, Noyes Island, approximately latitude 55°33'48" N., longitude 133°43'35" W., to the south extremity of Wood Island, approximately latitude 55°39'44" N., longitude 133°42'29" W.; thence to the east extremity of Timbered Islet, approximately latitude 55°41'47" N., longitude 133°47'42" W.; thence to the true west extremity of Timbered Islet, approximately latitude 55°41'46" N., longitude 133°48'01" W.; thence southwest three-quarters south sixteen and five-eighths miles to a point approximately latitude 55°34'46" N., longitude 134°14'40" W.; thence southeast by south twelve and one-half miles to a point approximately latitude 55°22'23" N., longitude 134°12'48" W.; thence northeast thirteen and seven-eighths miles to the southern extremity of Cape Addington, Noyes Island, latitude 55°26'11" N., longitude 133°49'12" W.; and to the point of origin on Cape Ulitka. The boundary lines herein indicated shall be determined from Chart 8157, as published by the United States Coast and Geodetic Survey at Washington, D. C., in June 1929, and Chart 8152, as published by the United States Coast and Geodetic Survey at Washington, D. C., in March 1933, and reissued March 1939, except for the point of Cape Addington which shall be determined from Chart 8158, as published by the United States Coast and Geodetic Survey in December 1923, provided that the duly authorized officers of the United States of America may at any time place a plainly visible mark or marks at any point or points as nearly as practicable on the boundary line defined herein, and such mark or marks shall thereafter be considered as correctly defining said boundary.

(c) Second, that area lying in the waters off the northern coast of Graham Island, British Columbia, within the following boundary, as stated in terms of the magnetic compass unless otherwise indicated; from the outer Entry Point Light, latitude 54°02'40" N., longitude 132°11'30" W.; thence northwest ten miles to a point approximately latitude 54°12'20" N., longitude 132°16'30" W.; thence true east approximately fourteen and one-half miles to a point which shall lie northwest of the highest point of Tow Hill, Graham Island, latitude 54°04'24" N., longitude 131°48'00" W.; thence southeast to the said highest point of Tow Hill. The points on the above mentioned island shall be determined from Chart 3754, published at the Admiralty, London, April 11, 1911, provided that the duly authorized officers of Canada may at any time place a plainly visible mark or marks at any point or points as nearly as practicable on the boundary line defined herein, and such marks shall thereafter be considered as correctly defining said boundary.

§ 301.12 *Dory gear prohibited.* The use of any hand gurdy or other appliance in hauling halibut gear by hand power in any dory or small boat operated from a vessel licensed under the provisions of the regulations in this part is prohibited in all convention waters.

§ 301.13 *Nets prohibited.* (a) It is prohibited to retain halibut taken in Areas 1A, 1B, 2, 3A, and in Area 3B, exclusive of that part known as Bering Sea, with a net of any kind or to have in possession any halibut in said areas while using any net or nets other than bait nets for the capture of other species of fish, nor shall any license or permit validated for said areas under the regulations in this part be valid during the use or possession on board of any net or nets other than bait nets: *Provided*, That the character and the use of said bait nets conform to the laws and regulations of the country where they may be utilized and that said bait nets are utilized for no other purpose than the capture of bait for said vessel.

(b) It is prohibited to retain halibut taken in that part of Area 3B known as Bering Sea with any net which does not have a cod end or fish bag of webbing whose dry-stretched mesh measures 12 inches or more between knots or hog rings, nor shall any license or permit held by any vessel fishing for crabs in that part of Area 3B known as Bering Sea be valid for the possession of halibut during the use or possession on board of any net which does not have a cod end or fish bag of webbing whose dry-stretched mesh measures 12 inches or more between knots or hog rings.

§ 301.14 *Retention of tagged halibut.* Nothing contained in the regulations in this part shall prohibit any vessel at any time from retaining and landing any halibut which bears a Commission tag at the time of capture: *Provided*, That such halibut with the tag still attached is reported at the time of landing to representatives of the Commission or to enforcement officers of the Governments of Canada or the United States and is made available to them for examination.

§ 301.15 *Responsibility of master.* Wherever in the regulations in this part any duty is laid upon any vessel, it shall be the personal responsibility of the master or operator of said vessel to see that said duty is performed and he shall personally be responsible for the performance of said duty. This provision shall not be construed to relieve any member of the crew of any responsibility with which he would otherwise be chargeable.

§ 301.16 *Supervision of unloading and weighing.* The unloading and weighing of the halibut of any vessel licensed under the regulations in this part and the unloading and weighing of halibut and other species of any vessel holding a permit under the regulations in this part shall be under such supervision as the customs or other authorized officer may deem advisable in order to assure the fulfillment of the provisions of the regulations in this part.

§ 301.17 *Previous regulations superseded.* The regulations in this part shall supersede all previous regulations adopted pursuant to the Convention between Canada and the United States of America for the preservation of the halibut fishery of the Northern Pacific Ocean and Bering Sea, signed March 2, 1953, except as to offenses occurring prior to the approval of the regulations in this

part. The regulations in this part shall be effective as to each succeeding year, with the dates herein specified changed accordingly, until superseded by subsequently approved regulations. Any determination made by the Commission pursuant to the regulations in this part shall become effective immediately.

SETON H. THOMPSON,
Chairman.
WILLIAM M. SPRULES,
Vice-Chairman.
HAROLD S. HELLAND,
MATTIAS MADSEN.
J. W. MENDENHALL.
RICHARD NELSON.

Signed:

SETON H. THOMPSON,
Chairman.

Signed:

H. A. DUNLOP,
Secretary.

Approved: March 28, 1958.

DWIGHT D. EISENHOWER.

Note: Also see Commercial Fisheries Review, June (1958) p. 55; April 1958, p. 49.

Eighty-Fifth Congress

(Second Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions, hearings, and other chamber actions by the House and Senate, as well as signature into law or other final disposition are covered.

ALASKA STATEHOOD: H. R. 7999, a bill to enable the people of Alaska to form a constitution and State government and to be admitted to the Union on an equal footing with the original States. Passed by the Senate on June 30, 1958, and cleared for the President. Signed on July 7, 1958 (P. L. 85-508). The Act as it applies to fish and wildlife reads as follows: Sec. 6. (e) All real and personal property of the United States situated in the Territory of Alaska which is specifically used for the sole purpose of conservation and protection of the fisheries and wildlife of Alaska, under the provisions of the Alaska game law of July 1, 1943 (57 Stat. 301; 48 U. S. C., secs. 192-211), as amended, and under the provisions of the Alaska commercial fisheries laws of June 26, 1906 (34 Stat. 478; 48 U. S. C., secs. 230-239 and 241-242), and June 6, 1924 (43 Stat. 465; 48 U. S. C., secs. 221-228), as supplemented and amended, shall be transferred and conveyed to the State of Alaska by the appropriate Federal agency: Provided, That the administration and management of the fish and wildlife resources of Alaska shall be retained by the Federal Government under existing laws until the first day of the first calendar year following the expiration of ninety legislative days after the Secretary of the Interior certifies to the Congress that the Alaska State Legislature has made adequate provision for the administration, management, and conservation of said resources in the broad national interest: Provided, That such transfer shall not include lands withdrawn or otherwise set apart as refuges or reservations for the protection of wildlife nor facilities utilized in connection therewith, or in connection with general research activities relating to fisheries or wildlife. Sums of money that are available for apportionment or which the Secretary of the Interior shall have apportioned, as of the date the State of Alaska shall be deemed to be admitted into the Union, for wildlife restoration in the Territory of Alaska, pursuant to section 8 (a) of the Act of September 2, 1937, as amended (16 U. S. C., sec. 669g-1), and for fish restoration and management in the Territory of Alaska, pursuant to section 12 of the Act of August 9, 1950 (16 U. S. C., sec. 777k), shall continue to be available for the period, and under the terms and conditions in effect at the time the apportionments are made. Commencing with the year during which Alaska is admitted into the Union, the Secretary of the Treasury, at the close of each fiscal year, shall pay to the State of Alaska 70 per centum of the net proceeds, as determined by the Secretary of the Interior, derived during such fiscal year from all sales of sealskins or sea-otter skins made in accordance with the provisions of the Act of February 26, 1944 (58 Stat. 100; 16 U. S. C., secs. 631a-631q), as supplemented and amended. In arriving at the net proceeds, there shall be deducted from the receipts from all sales all costs to the United States in carrying out the provisions of the Act of February 26, 1944, as supplemented and amended, including, but not limited to, the costs of handling and dressing the skins, the costs of making the sales, and all expenses incurred in the administration of the Pribilof Islands. Nothing in this Act shall be construed as affecting the rights of the United States under the provisions of the Act of February 26, 1944, as supplemented and amended, and the Act of June 28, 1937 (50 Stat. 325), as amended (16 U. S. C., sec. 772 et seq.). (See Commercial Fisheries Review, July 1958 p. 84, December 1957 p. 80, October 1957 pp. 42-43, September 1957 p. 76, July 1957 pp. 44-45, June 1957 p. 69, May 1957 p. 71, and February 1957 p. 62 for preceding actions on this bill.)

ALASKA TIDELAND LEASES: H. R. 8054, a bill to provide for the leasing of oil and gas deposits beneath inland navigable waters in the Territory of Alaska. Passed the Senate on June 20, 1958, and later returned to calendar for reconsideration of a new amendment. The amendment concerning the rate of royalty to be charged was accepted by the Senate and the bill was finally passed on June 23, 1958. Signed by the President on July 3, 1958 (P. L. 85-505). Section 5 protects the validity of existing or future rights to take natural resources including fish and game from the waters themselves and protects the navigational servitude. The section allows simultaneous use of such rights and servitudes and operations under oil and gas leases, but all operations

under such leases are subject to rules and regulations prescribed by the Secretary for the prevention of injury to fish and game. As finally enacted the words "inland navigable waters" were changed to "nontidal navigable waters." Nontidal is defined as all points upstream from a line connecting the headlands at the mouth or mouths of such streams. The rate of royalty shall be identical with those prescribed for leases covering similar lands in the States of the United States. The bill was reported (H. Rept. 774) in the House on July 9, 1957, and passed by the House on August 5, 1957.

S. Rept. No. 1720, Providing for the Leasing of Oil and Gas Deposits in Lands Beneath Nontidal Navigable Waters in the Territory of Alaska, and for Other Purposes (June 17, 1958, 85th Congress, 2nd Session, to accompany H. R. 8054), 14 pp., printed. The report by the Senate Committee on Interior and Insular Affairs gives the suggested changes in the House bill, background information, purposes of the major amendments to the bill, section-by-section analysis, some communications from the Department of the Interior, definitions, and changes in existing law.

ANTIDUMPING ACT OF 1921: H. R. 6006, a bill to amend the Antidumping Act of 1921, and for other purposes. Passed by the House, with amendments, on August 29, 1957, and by the Senate on May 26, 1958, with amendments. Conferees to a Committee on Conference were appointed by the House on July 1, 1958, and by the Senate on July 7, 1958. (See Commercial Fisheries Review, July 1958 pp. 84-85, November 1957 p. 65, October 1957 p. 43, May 1957 p. 71, April 1957 p. 65, and March 1957 p. 79.)

EXCISE TAX RATE EXTENSION: H. R. 12695, a bill to provide a 1-year extension of the existing normal-tax rate and of excise-tax rates, and to provide for the repeal of the taxes on the transportation of property. This bill was passed by both the Senate and the House and signed by the President on June 30, 1958 (P. L. 85-475). The bill as enacted provides for elimination of the 3 percent tax on the transportation of property (including fishery products).

EXEMPT TRUCK USE: H. R. 12832, a bill to amend the Interstate Commerce Act so as to strengthen and improve the national transportation system was passed by the House, as amended, on June 27, 1958. Following the passage of H. R. 12832 the House passed S. 3778, with an amendment, that substituted the language of H. R. 12832, except for the enacting clause. The House appointed conferees and the bill was sent to conference. The bill as passed retains the fisheries exemptions and reads as follows: "to include fish or shellfish and frozen products thereof containing seafood as a basic ingredient, whether breaded, cooked, or otherwise prepared (but not including fish and shellfish which have been treated for preserving, such as canned, smoked, salted, pickled, spiced, corned, or kippered)." (See Commercial Fisheries Review, July 1958 pp. 85-86 for additional information.

H. Rept. No. 1922, Transportation Act of 1958 (June 18, 1958, 85th Congress, 2nd Session), 54 pp., printed. To accompany H. R. 12832 (together with supplemental views). The report from the House Committee on Interstate and Foreign Commerce gives the changes made in the original bill by the Committee, the agricultural commodities exemption, views of Committee members that disagree in one way or the other with the report, and, appendixes which list exempt and nonexempt commodities.

H. Rept. No. 2007, Consideration of H. R. 12832 (June 25, 1958, 85th Congress, 2nd Session), 1 p., printed, to accompany H. Res. 608. The report recommended the passage of H. Res. 608, which would limit debate on H. R. 12832.

FISH AND WILDLIFE SERVICE: Review of Fish and Wildlife Service (Hearings before the Committee on Merchant Marine and Fisheries, House of Representatives, Eighty-Fifth Congress, Second Session, January 10, 13, 14, and 15, 1958), 378 pp., printed. Presents the information given at the hearings held by the House Committee on Merchant Marine and Fisheries on the status of Fish and Wildlife Service reorganization and current activities. Includes statements presented to the Committee by Interior Departmental, Service, and Bureau officials. The activities of the Bureau of Commercial Fisheries are described in detail with accompanying illustrations and charts.

FOREIGN TRADE STATISTICS COLLECTION AND PUBLICATION: S. 4005 (Johnson of So. Carolina) introduced in the Senate on June 12, 1958, a bill to amend title 13 of the United States Code to provide for the collection and publication of foreign trade commerce and trade statistics and for other purposes; referred to the Committee on Post Office and Civil Service. The bill would give the Secretary of the Treasury authority to impose fines of $100 per day but not exceeding $1,000 for failure to meet the reporting regulations.

MARINE MAMMAL PROTECTION ON THE HIGH SEAS: S. 4115 (Murray), introduced in the Senate on July 9, 1958, a bill to revise the Alaska game law and provide for the protection of marine mammals on and off the coast of Alaska; to the Committee on Interior and Insular Affairs. The bill provides for the protection of walrus and polar bear on the high seas and makes certain other changes in the Alaskan game laws.

MIGRATORY BIRD HUNTING STAMP ACT AMENDMENT: S. 2617 (Magnuson), a bill to amend the Migratory Bird Stamp Act of March 16, 1934, as amended; referred to the Committee on Interstate and Foreign Commerce. Reported (S. Rept. No. 1426) in Senate on March 26, 1958 and passed by the Senate in June 1958. The bill provides for increases in the cost of the duck stamp from $2 to $3 and earmarks the increase for acquisition and leasing of wet lands. Areas to be purchased would include marsh and fresh-water areas along the coasts which would benefit fish and shellfish by protecting important spawning and nursery areas that may be lost through various types of development.

OUTDOOR RECREATION RESOURCES REVIEW COMMISSION: S. 846, a bill to create a National Outdoor Resources Review Commission to study the outdoor recreation resources of the public lands and other land and water areas of the United States, and for other purposes; referred to Committee on Interior and Insular Affairs. This bill provides for a Commission to study outdoor

recreation resources of land and water areas. An advisory council would be appointed consisting of representatives of various groups, including commercial fishery interests. This bill was reported in the Senate on June 19, 1957 (S. Rept. No. 471), passed by the Senate on June 26, 1957 and referred to the House Committee on Interior and Insular Affairs on June 27, 1957. The bill passed the House in June 1958 and final action by both the Senate and the House was completed on June 19, 1958. Signed by the President on July 9, 1958 (P. L. 85-470). "Secs. 7 and 8 of the law point out: Sec. 7. The Commission, in its inquiries, findings, and recommendations, shall recognize that present and future solutions to problems of outdoor recreation resources and opportunities are responsibilities at all levels of government, from local to Federal, and of individuals and private organizations as well. The Commission shall recognize that lands, waters, forest, rangelands, wetlands, wildlife and such other natural resources that serve economic purposes also serve to varying degrees and for varying uses outdoor recreation purposes, and that sound planning of resource utilization for the full future welfare of the Nation must include coordination and integration of all such multiple uses. Sec. 8. There are hereby authorized to be appropriated not more than $2,500,000 to carry out the purposes of this Act, and such moneys as may be appropriated shall be available to the Commission until expended."

POWER PROJECTS FISHERIES RESOURCES DEVELOPMENT: H. R. 13057 (Blatnik) introduced in the House on June 19, 1958, a bill to promote the conservation of migratory fish and game by requiring certain approval by the Secretary of the Interior of licenses issued under the Federal Power Act; to the Committee on Interstate and Foreign Commerce. Also introduced on July 2, 1958, H. R. 13729 (Saylor), similar to H. R. 13057, and to S. 3185 (Newberger), reported favorably on June 13, 1958.

SHIP MORTGAGE INSURANCE PLEDGE-OF-FAITH CLAUSE: H. R. 12739 (Bonner), a bill to amend section 1105(b) of title XI (Federal Ship Mortgage Insurance) of the Merchant Marine Act of 1936, as amended, to implement the pledge-of-faith clause. The bill was passed by the House on June 26, 1958, without amendment. S. 3919, a similar Senate bill was passed by the Senate on July 1, 1958. Later on the same day, the Senate substituted H. R. 12739 (in lieu of S. 3919) and passed this bill without amendment. The bill provides for temporary loans to the Secretary of Commerce from the Secretary of the Treasury in case of a default on a ship mortgage. The bill was signed by the President on July 15, 1958 (P. L. No. 85-520).

S. Rept. No. 1759, Implementing the Pledge-of-Faith Clause in the Federal Ship Mortgage Statute (June 24, 1958, 85th Congress, 2nd Session, to accompany S. 3919), 8 pp., printed. The report by the Committee on Interstate and Foreign Commerce gives the purpose of the bill, background of the proposed legislation, statements by Government officials, and changes in existing law. (See Commercial Fisheries Review, July 1958, p. 87, for earlier actions on the bills.) Under the terms of the Fish and Wildlife Act of 1956, the authority of the Secretary of Commerce to guarantee ship mortgages insofar as concerns fishing vessels could be delegated to the Secretary of the Interior. If this comes about, fishing vessels could be built under the same favorable terms as now exist for the United States Merchant Marine.

SMALL BOAT REGULATION: Committee on Rules on June 12 reported (H. Rept. No. 1877) to the House H. Res. 591, providing for the consideration of, and 2 hours of debate on, H. R. 11078, to promote boating safety on the navigable waters of the United States and provide coordination and cooperation with the States in the interest of uniformity of boat laws. H. R. 11078 was later returned to the Committee due to some technical errors and reported (H. Rept. No. 2039) favorably on June 26, 1958, with amendment, by the Committee on Merchant Marine and Fisheries. A second resolution (H. Res. 626) to bring the bill before the House with limited debate was reported favorably by the Committee on Rules on July 9, 1958 (H. Rept. No. 2125). (See Commercial Fisheries Review, June 1958 p. 83 for additional information.)

SMALL BUSINESS: H. Rept. No. 1889, Problems of Small-Business Financing (June 17, 1958, a report of the Select Committee on Small Business, House of Representatives, 85th Congress, 2nd Session, pursuant to H. Res. 56, a resolution creating a Select Committee to conduct a study and investigation of the problems of small business), 109 pp., printed. Presents reports, tables, and graphs from private industry and Government officials on the need for long-term debt and equity capital and failure of existing lending agencies to provide debt and equity capital for small businesses. Recommends that the Federal Government provide leadership in authorizing, promoting, and assisting in the establishment of new facilities to provide long-term loans and equity capital for small business. (See Commercial Fisheries Review, July 1958, pp. 87-88.)

SMALL BUSINESS ADMINISTRATION PERMANENT STATUS: H. R. 7963 (Spence), a bill to amend the Small Business Act of 1953, as amended. Reported by Senate Committee on Banking and Currency on June 16, 1958 (S. Rept. No. 1714). The bill, previously passed by the House on June 25, 1957, was passed by the Senate on July 1, 1958, with numerous amendments. The bill as passed by the Senate provides permanent status for the Small Business Administration, increases the revolving fund for business, disaster, and prime contract loans (total for business loans would be $500 million) by $120 million, increases the maximum of loans from $250,000 to $350,000. Also directs the Administration to assist small business in obtaining Government research and development contracts; obtain research and development information from other contracts entered into by the Government with other firms; authorizes small business to join together in research and development work without regard to antitrust laws, providing the Administration and the Attorney General agree that national interest would be served thereby. Rejected the House provision requiring the Small Business Administration to provide a new definition of small business. The Senate insisted on its amendments and appointed Conferees to a Committee on Conference. The House appointed Conferees on July 2, 1958 and the Committee on Conference reported (H. Rept. 2135) on July 9, 1958. The conference report provided

for a 5½-percent limit on interest and an individual loan limit of $350,000.

S. Rept. No. 1714, Small Business Act (June 16, 1958, 85th Congress, 2nd Session, to accompany H. R. 7963), 40 pp., printed. The report by the Senate Committee on Banking and Currency gives the legislative history of the bill, a summary of Small Business Programs, the principal changes in existing law, and the amendments to H. R. 7963 as passed by the House. In effect H. R. 7963 completely rewrites the Small Business Act of 1953 in both the House and Senate versions of the bill.

SMALL BUSINESS INVESTMENT CORPORATION: S. 3651, a bill to establish a Small Business Investment Corporation to furnish needed equity capital to small business concerns in the United States; and for other purposes. Reported (H. Rept. No. 2060) by the House Committee on Banking and Currency on June 30, 1958, and referred to the Committee of the Whole House.

H. Res. 618, a resolution to suspend the rules and limit debate to two hours in consideration of S. 3651, was reported (H. Rept. No. 2115) favorably on July 2, 1958. (See Commercial Fisheries Review, July 1958 p. 87 for further information on S. 3651.)

H. Rept. No. 2060, Small Business Investment Act of 1958 (June 30, 1958, 85th Congress, 2nd Session, to accompany S. 3651), 35 pp., printed. Describes purpose of bill, provisions and purposes of funds for encouraging the establishment of privately-owned small-business investment companies to be supervised by a Small Business Investment Division of the Small Business Administration. The sum of $250 million (same as recommended by Senate) would be appropriated for capital funds. The report also outlines the organization of small business investment companies, capital stock requirements, limits of loans by Administration to investment companies, loans to small-business concerns by small-business investment companies, and an outline of the differences between S. 3651 as passed by the Senate and the bill as reported in the House.

SMALL BUSINESS RESEARCH AND DEVELOPMENT ACT OF 1958: S. 4033 (Javitts and others) introduced in the Senate on June 19, 1958, a bill to amend the Small Business Act of 1953 to assist small-business concerns to participate in and derive benefits from research and development; to the Committee on Banking and Currency. This bill, similar in title and purpose to S. 2993 (Fulbright), introduced in the Senate on January 13, 1958, provides loans of up to $250,000 by the Small Business Administration to any research and development organization established by a group of small concerns which could presently qualify for individual loans under the provisions of the Small Business Act of 1953. The total amount available for loans shall not exceed $20 million. Loans of this type to groups of small business concerns would enable these groups to undertake applied research on their own initiative, and to share results with members. This bill includes some of the provisions of H. R. 7963 which has passed the House and Senate.

STATE DEPARTMENT APPROPRIATIONS: Senate on June 11 passed H. R. 12428, fiscal 1959 appropriations for the Departments of State and Justice, and the Judiciary, after adopting all committee amendments en bloc. Senate insisted on its amendments, and asked for conference with House, and appointed conferees. The Committee on Conference reported to the House on June 24 and the bill was sent to both Houses for final action. The bill was signed into law by the President on June 30, 1958 (P. L. 85-474). The bill as signed includes $1,644,900 for the operation of International Fisheries Commission for fiscal year 1959. (See Commercial Fisheries Review, July 1958 p. 88, and June 1958 pp. 83-84.)

S. Rept. No. 1683, Departments of State and Justice, the Judiciary, and Related Agencies Appropriation Bill, 1959 (June 9, 1958, 85th Congress, 2nd Session, to accompany H. R. 12428), 13 pp., printed. The report by the Senate Committee on Appropriations as it concerns funds for International Fisheries Commissions made no changes in funds for these functions.

H. Rept. No. 1980, Departments of State and Justice, the Judiciary, and Related Agencies Appropriation Bill, 1958 (June 24, 1958, 85th Congress, 2nd Session, to accompany H. R. 12438), 6 pp., printed. As further reported by the Committee on Conference no changes were made in the funds appropriated for International Fisheries Commissions.

TRADE AGREEMENTS ACT EXTENSION: H. R. 12591, to extend the authority of the President to enter into trade agreements under section 350 of the Tariff Act of 1930, as amended. Hearings were held by the Senate Ways and Means Committee beginning on June 18 and concluded on July 3, 1958. The bill was reported to the Senate by the Committee on July 15, 1958. (See Commercial Fisheries Review July 1958 pp. 88-89, June 1958 p. 84, May 1958 p. 79, April 1958 p. 94, and March 1958 p. 65.)

S. Rept. No. 1838, Trade Agreements Extension Act of 1958 (July 15, 1958, 85th Congress, 2nd Session, to accompany H. R. 12591), 47 pp., printed. The report by the Senate Committee on Ways and Means, together with individual and minority views, summarizes the amendments to the bill as passed by the House as follows: (1) The authority to reduce tariffs in trade agreements was extended for a period of 3 years, until June 30, 1961. The House bill would have extended such authority for a period of 5 years, until June 30, 1963. (2) Authority is granted to the President to reduce duties a total of 15 percent below present levels at the rate of 5 percent per year on the same basis as existed under the 1955 act. In other words the amount of decrease becoming initially effective at one time must not exceed 5 percent of the rate existing on July 1, 1958. Also, no part of any decrease in duty under this alternative shall become initially effective after the expiration of the 3-year period which begins on July 1, 1958. (3) The House-passed provisions relating to escape clause procedure under which Presidential disapproval of the Tariff Commission recommendation would be overridden by the adoption of a congressional concurrent resolution by a two-thirds vote of both Houses were deleted. In place of these provisions the Finance Committee inserted language providing that the Tariff Commission's recommendations would become

effective unless the President's disapproval of those recommendations was sustained by majority vote of each House of Congress. In case of a divided vote by the Tariff Commission as to injury, the affirmative findings would be considered the findings of the Commission. In any case where there existed a divided vote as to the remedy for the injury, the recommendation specified by the President in his report to Congress as providing the greatest measure of relief would be considered as the findings of the Commission. (4) The committee broadened the language of the House provisions relating to national security by providing that in the administration of those provisions the President must take into consideration the effect on the national security of a weakening of the general economy by excessive imports of competitive products. It also provided, in national security cases, that unless the President determines the article in question is not being imported into the United States in such quantities as to threaten the national security he shall take steps to adjust the imports of the article and its derivatives. (5) The Finance Committee added to the bill an amendment to establish a nine-member bipartisan commission to investigate and report on the international trade agreement policy of the United States and to recommend improvements in policies, measures, practices, and administration. An interim report is to be filed on or before June 30, 1959, and a final report, including recommendations, must be presented to the President and the Congress on or before June 30, 1960. The Commission is to be composed of 3 members appointed by the President, none of whom may be members of the executive branch; 3 from the Senate Committee on Finance, appointed by the Vice President; and 3 from the House Ways and Means Committee, appointed by the Speaker of the House. No more than two in each group are to be from the same political party. Also, gives a general statement concerning the legislation, a section-by-section explanation of the reported bill, the individuals' views of Senator Douglas, a minority report, and changes in existing law.

Trade Agreements Act Extension (Hearings before the Committee on Finance, United States Senate, 85th Congress, 2nd Session, on H. R. 12591, an Act to Extend the Authority of the President to Enter into Trade Agreements under Section 350 of the Tariff Act of 1930, as amended, and for other purposes, Part 1, June 20, 21, 23, 24, 25, 26, 1958) 837 pp., printed. Presents an analysis and the text of H. R. 12591, reports by a number of Federal Agencies (including the Department of the Interior), statements by individuals and business representatives, and letters and telegrams expressing views on the bill. In addition, reports on action by the President on Tariff Commission recommendations on escape-clause cases, Administration trade policy, calendar of trade agreements, comparisons between imports and United States domestic production, statistics on United States foreign trade, etc.

TRANSPORTATION SYSTEM STUDY: S. Res. 303 (Smathers) introduced in the Senate on May 12, 1958, a resolution providing for study of transportation policies in the United States; referred to the Committee on Interstate and Foreign Commerce. This resolution was reported, with amendments, and referred to the Committee on Rules and Administration on May 28, 1958. Provides the sum of $100,000 for the Committee on Interstate and Foreign Commerce, or a duly authorized subcommittee thereof, for a comprehensive study of transportation policy and related problems. Present Federal regulations and exemptions from these regulations would be included in the studies.

UNEMPLOYMENT RELIEF IN DEPRESSED AREAS: S. 3683, a bill to establish an effective program to alleviate the conditions of excessive unemployment in certain economically depressed areas. This bill which was passed by the Senate on May 28, 1958, was reported (H. Rept. No. 2099) in the House on July 1, 1958.

Editorial Assistant--Ruth V. Keefe Illustrator--Gustaf T. Sundstrom

Compositors--Jean Zalevsky, Alma Greene, Helen Joswick, and Vera Eggleston

* * * * *

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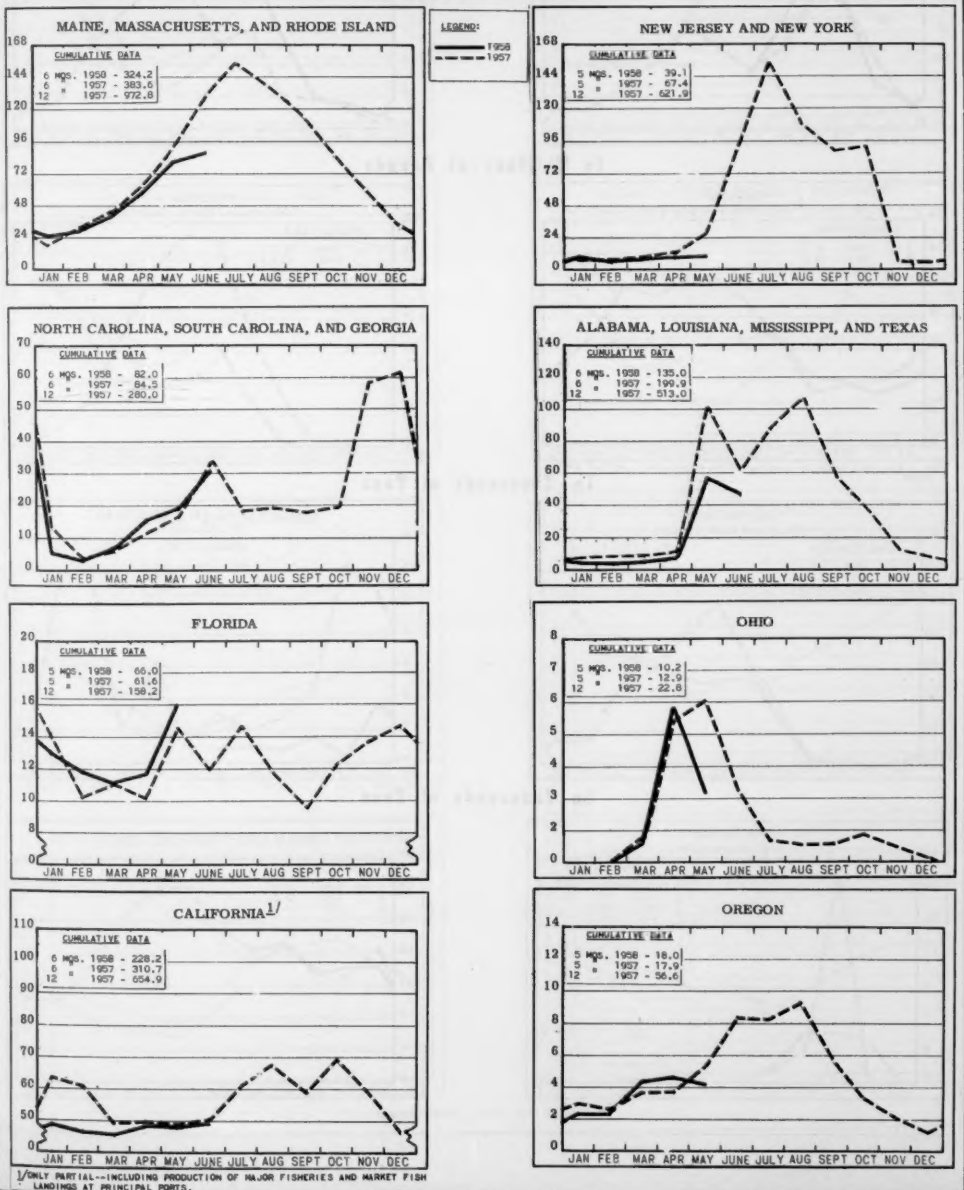
FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

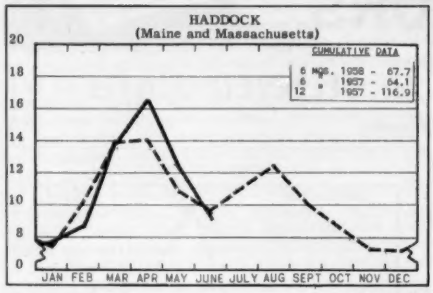
In Millions of Pounds

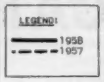

MAINE, MASSACHUSETTS, AND RHODE ISLAND
CUMULATIVE DATA
6 MOS. 1958 - 324.2
6 " 1957 - 383.6
12 " 1957 - 972.8
LEGEND:
1958
1957
NEW JERSEY AND NEW YORK
CUMULATIVE DATA
5 MOS. 1958 - 39.1
5 " 1957 - 67.4
12 " 1957 - 621.9
NORTH CAROLINA, SOUTH CAROLINA, AND GEORGIA
CUMULATIVE DATA
6 MOS. 1958 - 82.0
6 " 1957 - 84.5
12 " 1957 - 280.0
ALABAMA, LOUISIANA, MISSISSIPPI, AND TEXAS
CUMULATIVE DATA
6 MOS. 1958 - 135.0
6 " 1957 - 199.9
12 " 1957 - 513.0
FLORIDA
CUMULATIVE DATA
5 MOS. 1958 - 66.0
5 " 1957 - 61.6
12 " 1957 - 158.2
OHIO
CUMULATIVE DATA
5 MOS. 1958 - 10.2
5 " 1957 - 12.9
12 " 1957 - 22.8
CALIFORNIA 1/
CUMULATIVE DATA
6 MOS. 1958 - 228.2
6 " 1957 - 310.7
12 " 1957 - 654.9
OREGON
CUMULATIVE DATA
5 MOS. 1958 - 18.0
5 " 1957 - 17.9
12 " 1957 - 56.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

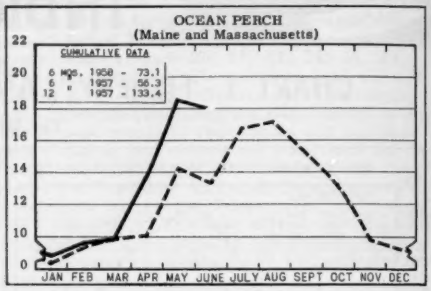
1/ ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

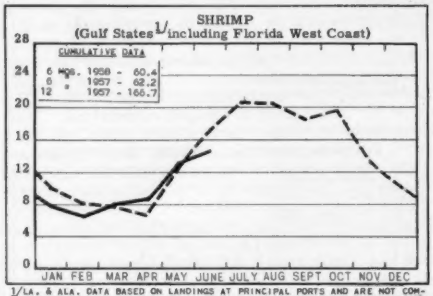
In Millions of Pounds



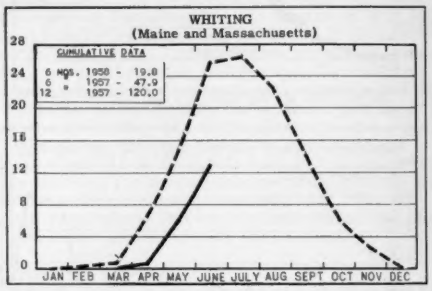




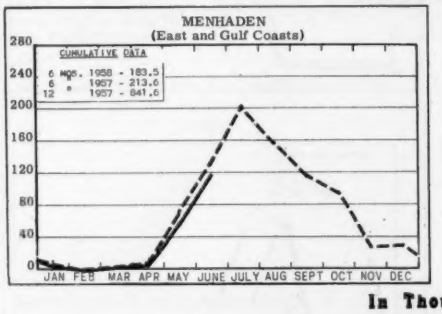
In Millions of Pounds

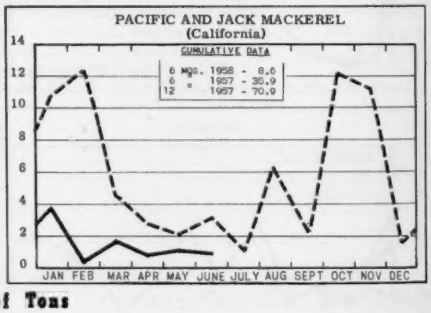


1/ LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

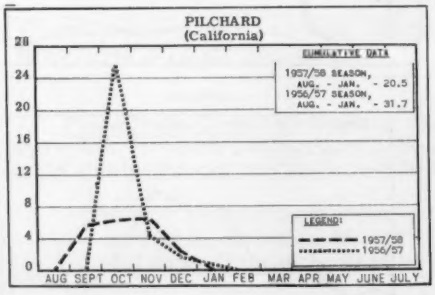


In Thousands of Tons





In Thousands of Tons



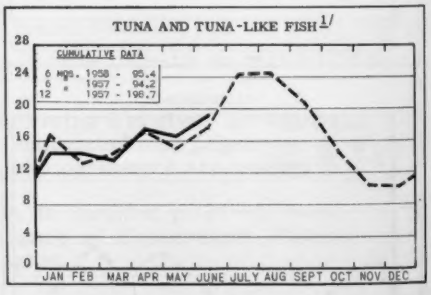
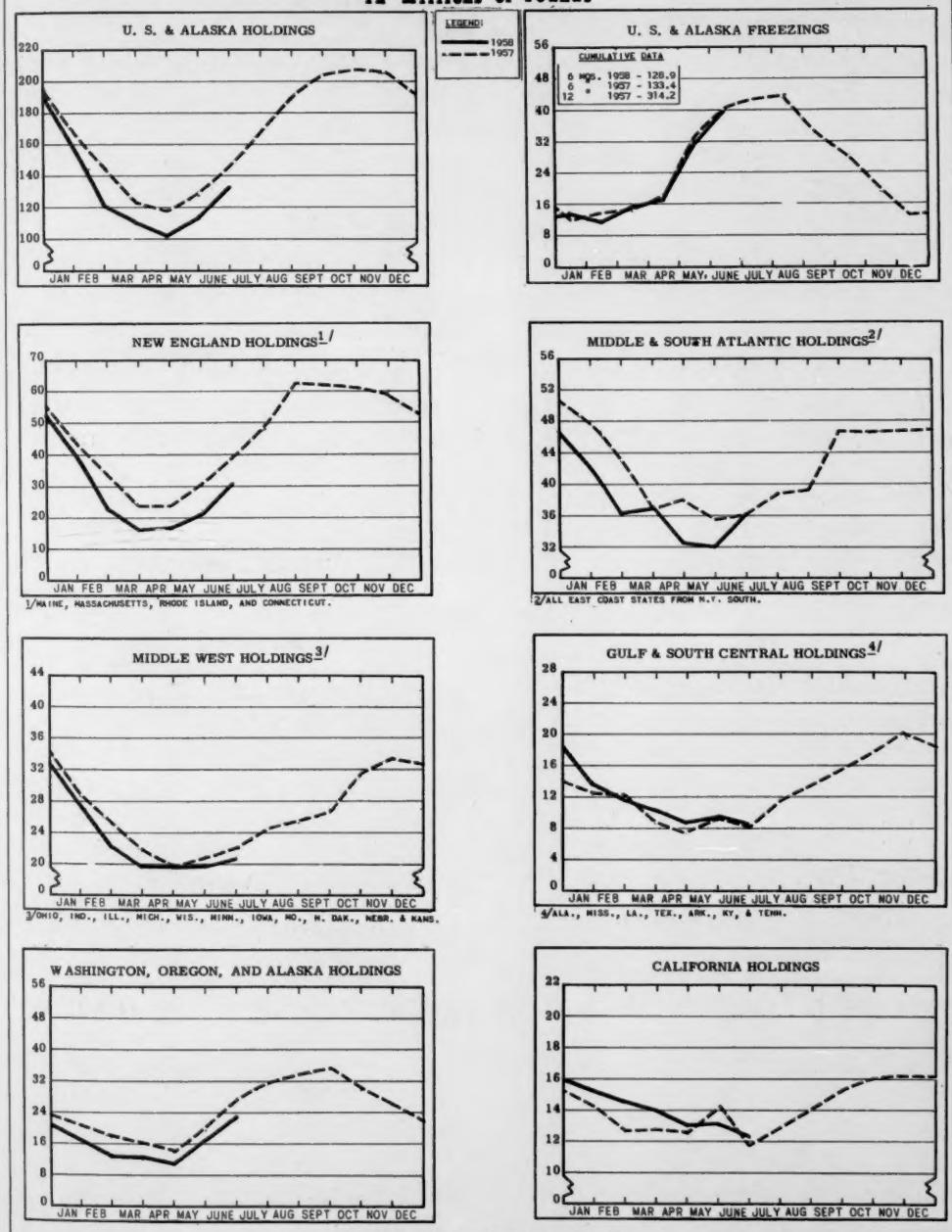


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds


U. S. & ALASKA HOLDINGS
LEGEND:
1958
1957
U. S. & ALASKA FREEZINGS
CUMULATIVE DATA
6 MOS. 1958 - 128.9
6 " 1957 - 133.4
12 " 1957 - 314.2
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
NEW ENGLAND HOLDINGS 1/
1/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT.
MIDDLE & SOUTH ATLANTIC HOLDINGS 2/
2/ALL EAST COAST STATES FROM N.Y. SOUTH.
MIDDLE WEST HOLDINGS 3/
3/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR. & KANS.
GULF & SOUTH CENTRAL HOLDINGS 4/
4/ALA., MISS., LA., TEX., ARK., KY, & TENN.
WASHINGTON, OREGON, AND ALASKA HOLDINGS
CALIFORNIA HOLDINGS

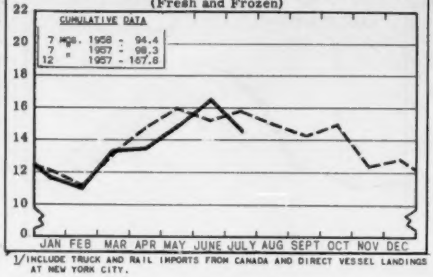
* Excludes salted, cured, and smoked products

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

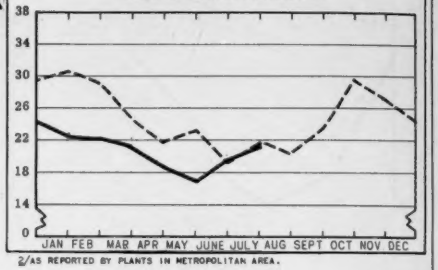
NEW YORK CITY

RECEIPTS[1/] AT WHOLESALE SALT-WATER MARKET (Fresh and Frozen)



1/ INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

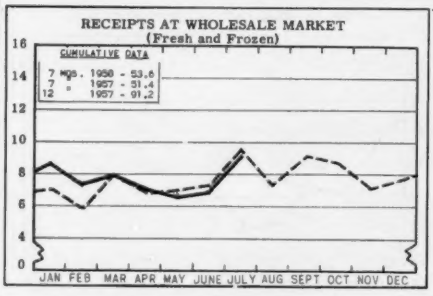
COLD-STORAGE HOLDINGS[2/]



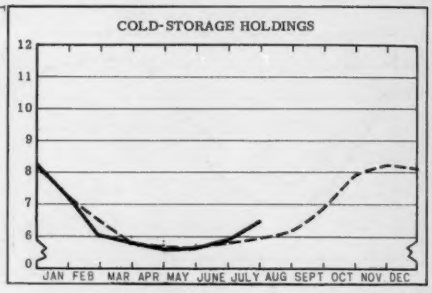
2/ AS REPORTED BY PLANTS IN METROPOLITAN AREA.

CHICAGO

RECEIPTS AT WHOLESALE MARKET (Fresh and Frozen)

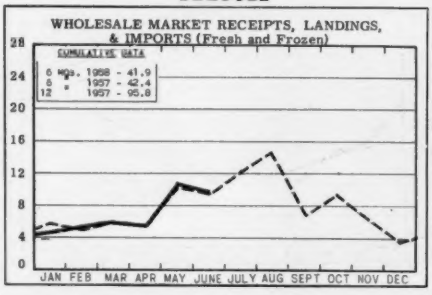


COLD-STORAGE HOLDINGS



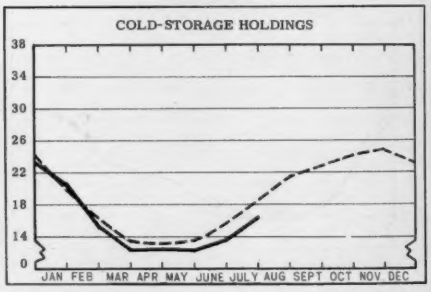
SEATTLE

WHOLESALE MARKET RECEIPTS, LANDINGS, & IMPORTS (Fresh and Frozen)



BOSTON

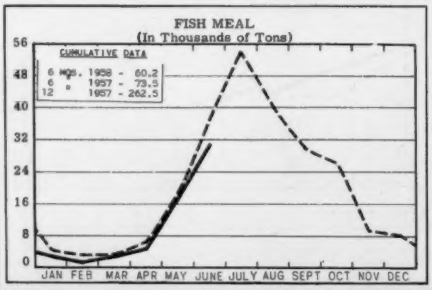
COLD-STORAGE HOLDINGS



LEGEND:
1958
1957

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

FISH MEAL (In Thousands of Tons)



FISH OIL (In Millions of Gallons)

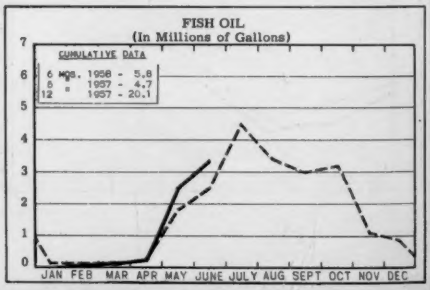
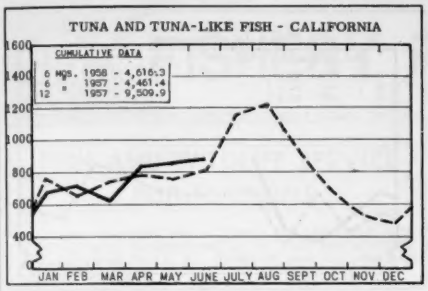
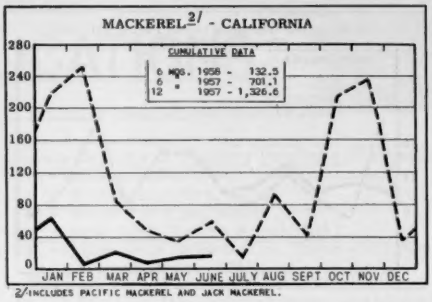


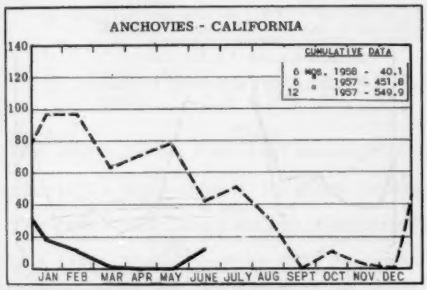
CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

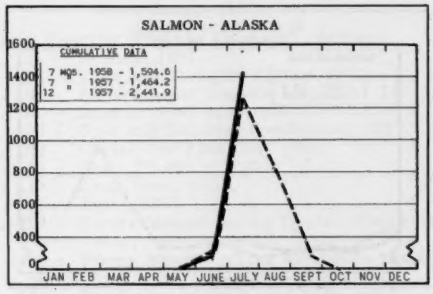
In Thousands of Standard Cases

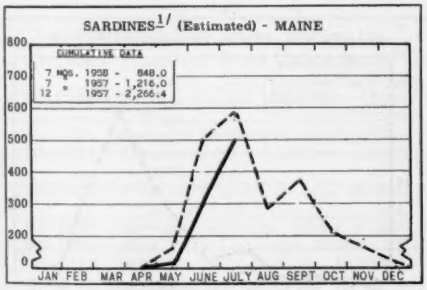

TUNA AND TUNA-LIKE FISH - CALIFORNIA
CUMULATIVE DATA
6 MOS. 1958 - 4,616.3
6 " 1957 - 4,461.4
12 " 1957 - 9,509.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


MACKEREL 2/ - CALIFORNIA
CUMULATIVE DATA
6 MOS. 1958 - 132.5
6 " 1957 - 701.1
12 " 1957 - 1,326.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

2/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.

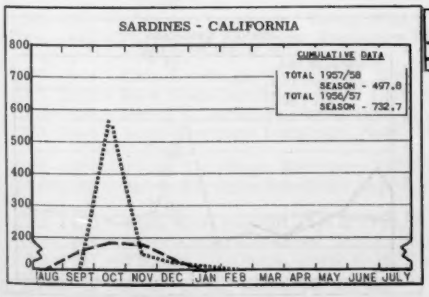

ANCHOVIES - CALIFORNIA
CUMULATIVE DATA
6 MOS. 1958 - 40.1
6 " 1957 - 451.8
12 " 1957 - 549.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

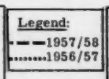



SARDINES 1/ (Estimated) - MAINE
CUMULATIVE DATA
7 MOS. 1958 - 848.0
7 " 1957 - 1,216.0
12 " 1957 - 2,266.4
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	¼ drawn	3¾ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# ½ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	½-lb.	8 oz.


SARDINES - CALIFORNIA
CUMULATIVE DATA
TOTAL 1957/58 SEASON - 497.8
TOTAL 1956/57 SEASON - 732.7
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY



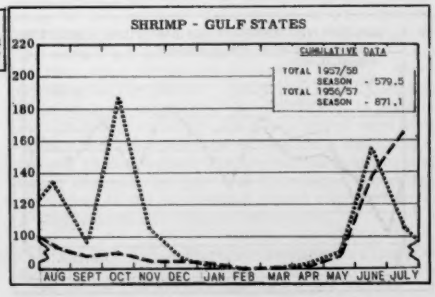
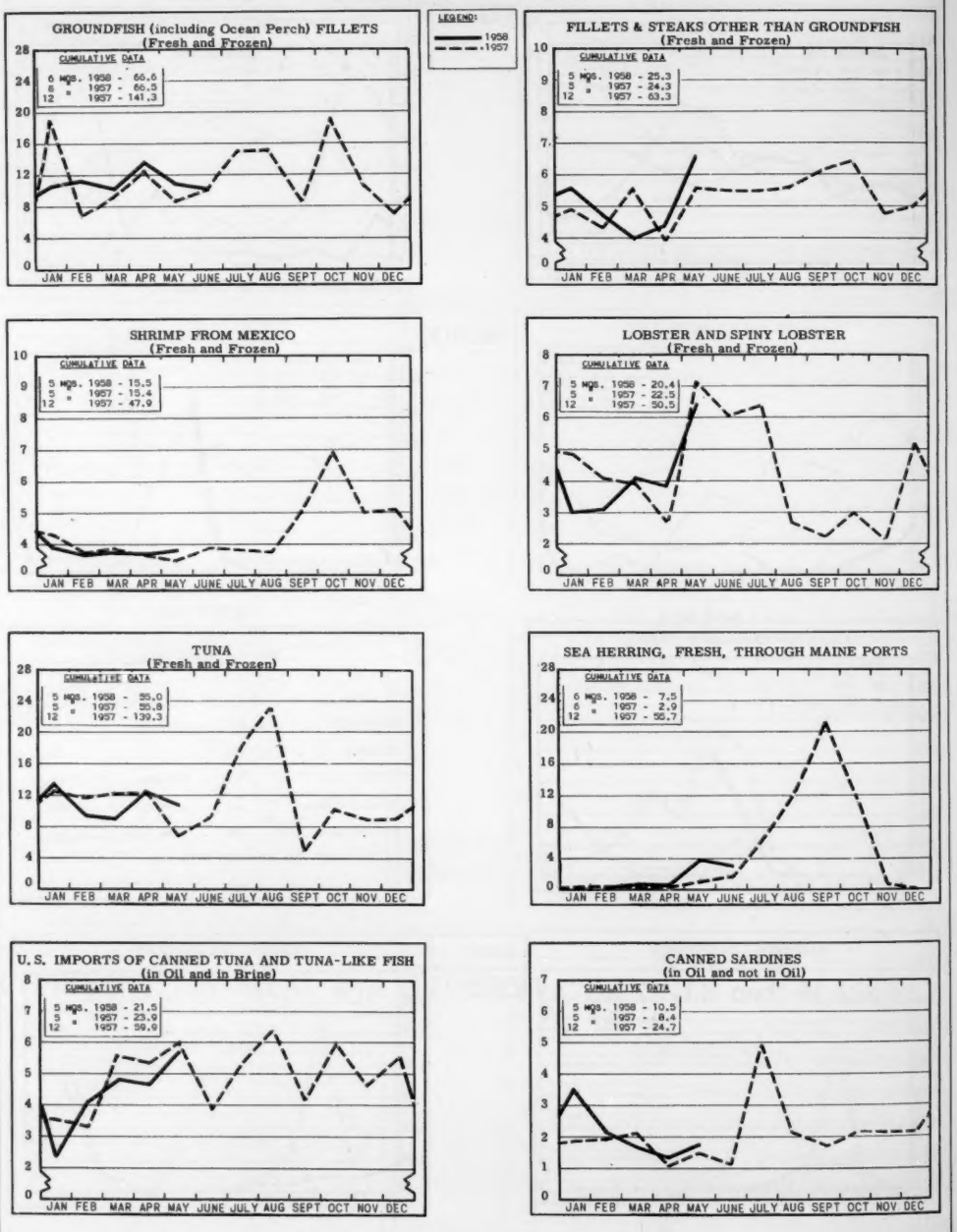
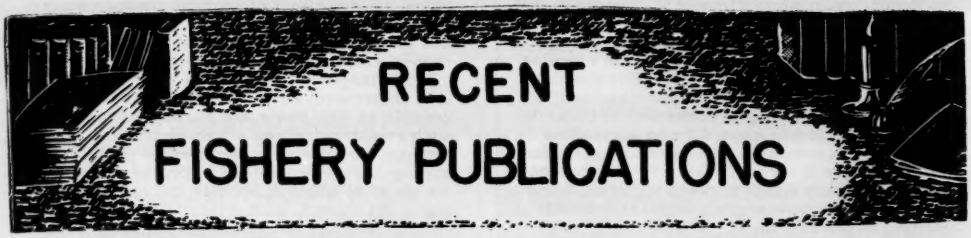

SHRIMP - GULF STATES
CUMULATIVE DATA
TOTAL 1957/58 SEASON - 579.5
TOTAL 1956/57 SEASON - 871.1
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY

CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds


GROUNDFISH (including Ocean Perch) FILLETS
(Fresh and Frozen)
CUMULATIVE DATA
6 MOS. 1958 - 66.6
6 " 1957 - 66.5
12 " 1957 - 141.3
LEGEND:
1958
1957
FILLETS & STEAKS OTHER THAN GROUNDFISH
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1958 - 25.3
5 " 1957 - 24.3
12 " 1957 - 63.3
SHRIMP FROM MEXICO
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1958 - 15.5
5 " 1957 - 15.4
12 " 1957 - 47.9
LOBSTER AND SPINY LOBSTER
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1958 - 20.4
5 " 1957 - 22.5
12 " 1957 - 50.5
TUNA
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1958 - 35.0
5 " 1957 - 30.8
12 " 1957 - 139.3
SEA HERRING, FRESH, THROUGH MAINE PORTS
CUMULATIVE DATA
6 MOS. 1958 - 7.5
6 " 1957 - 2.9
12 " 1957 - 30.7
U.S. IMPORTS OF CANNED TUNA AND TUNA-LIKE FISH
(in Oil and in Brine)
CUMULATIVE DATA
5 MOS. 1958 - 21.5
5 " 1957 - 23.9
12 " 1957 - 39.9
CANNED SARDINES
(in Oil and not in Oil)
CUMULATIVE DATA
5 MOS. 1958 - 10.5
5 " 1957 - 8.4
12 " 1957 - 24.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC



FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR.- FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
FL - FISHERY LEAFLETS.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number Title

CFS-1763 - Frozen Fish, 1957 Annual Summary, 14 pp.
CFS-1767 - Massachusetts Landings, December 1057, 6 pp.
CFS-1785 - New York Landings, February 1958, 4 pp.
CFS-1786 - Maine Landings, 1957 Annual Summary by Months, 6 pp.
CFS-1791 - Alabama Landings, 1957 Annual Summary, 4 pp.
CFS-1794 - Fish Meal and Oil, March 1958, 2 pp.
CFS-1795 - Frozen Fish Report, April 1958, 8 pp.
CFS-1796 - Fisheries of the United States and Alaska, 1956 Annual Summary, 12 pp.
CFS-1798 - South Carolina Landings, March 1958, 2 pp.
CFS-1799 - Georgia Landings, March 1958, 2 pp.
CFS-1804 - Massachusetts Landings, January 1958, 3 pp.
CFS-1806 - Fish Meal and Oil, 1957 Annual Summary, 4 pp.
CFS-1807 - Shrimp Landings, January 1958, 6 pp.
CFS-1808 - New York Landings, March 1958, 4 pp.
CFS-1810 - Mississippi Landings, March 1958, 2 pp.
CFS-1811 - Rhode Island Landings, March 1958, 3 pp.
CFS-1812 - Alabama Landings, March 1958, 2 pp.
CFS-1813 - California Landings, February 1958, 4 pp.
CFS-1814 - Ohio Landings, April 1958, 2 pp.
CFS-1815 - New York Landings, April 1958, 4 pp.
CFS-1816 - Georgia Landings, April 1958, 2 pp.
CFS-1818 - South Carolina Landings, April 1958, 2 pp.
CFS-1821 - Texas Landings, February 1958, 3 pp.
CFS-1822 - North Carolina Landings, April 1958, 3 pp.
CFS-1823 - Fish Meal and Oil, April 1958, 2 pp.
CFS-1824 - Mississippi Landings, April 1958, 2 pp.
CFS-1827 - Florida Landings, April 1958, 7 pp.
CFS-1828 - Maine Landings, April 1958, 3 pp.

Wholesale Dealers in Fishery Products (Revised):

SL-1 - Maine, 1957.
SL-2 - New Hampshire, 1958.
SL-14 - South Carolina, 1958.
SL-31 - New York (Lakes Area), 1957.
SL-32 - Minnesota (Mississippi River and Tributaries Area), 1958.
SL-41 - Arkansas, 1957.
SL-43 - Alabama (Mississippi River and Tributaries Area), 1957.

Firms Canning (Fishery Products), Revised:

SL-101 - Salmon, 1957.
SL-103 - Tuna and Tunalike Fishes, 1957.
SL-105 - Alewives and Alewife Roe, 1957.
SL-106 - Shad or Shad Roe, 1957.
SL-107 - Fish and Shellfish Specialties, 1957.
SL-109 - Caviar and Fish Roe, 1957.
SL-111 - Clam Products, 1957.
SL-113 - Crab Meat, 1957.
SL-119 - Squid, 1957.
SL-152 - Firms Manufacturing Oyster Shell Products, 1957 (revised).
SL-160 - Firms Manufacturing Menhaden Products, 1957 (revised).
SL-161 - Producers of Packaged Fish, 1957 (revised).

SSR-Fish. No. 240 - Selected References on the Channel Catfish, Ictalurus punctatus, by Carl D. Riggs, 10 pp., February 1958.

SSR-Fish. No. 244 - Use of Diagnostic X-Ray for Determining Vertebral Numbers of Fish, by Doyle F. Sutherland, 14 pp., illus., March 1958. The purpose of this paper is to (1) describe the types of X-ray machines commonly used in fish radiography, (2) describe necessary accessory equipment and supplies, (3) present techniques for successful resolution of fish vertebrae by radiography, (4) show a cost analysis of investment and operation of an X-ray machine, and (5) furnish a parts list and a circuit diagram from which an efficient, inexpensive machine may be assembled. Diagnostic X-ray equipment and supplies are described and methods given for resolving vertebral centri of menhaden larger than approximately $\frac{1}{2}$-inch in length. According to the author, "only a minimum amount of technical knowledge is necessary to produce satisfactory radiographs from which vertebral counts can be made, thus reducing the time required to determine the vertebral numbers of large samples of fish and forming a fixed impression of the vertebrae which can be conveniently stored for future reference."

SSR-Fish. No. 247 - Further Studies on Green or Offcolor Condition in Precooked Yellowfin Tuna,

by John J. Naughton, Michael M. Frodyma, and Harry Zeitlin, 18 pp., illus., November 1957. Results are reported from a study of the "greening" condition that appears in certain samples of yellowfin tuna on precooking. Evidence is presented that this is an actual color condition similar to discoloring processes that occur in other meats, and is caused by an anomalous heme protein oxidation. Related to this tendency to turn green on precooking are the presence of high concentrations of metmyoglobin, some denaturation, and a slightly high fat peroxide content in the raw meat. In addition, green meat generally has a high flesh pigment content. Oxygen starvation due to the exhaustion of the fish that might occur in the process of catching does not seem to produce the factors that lead to greening, but rather a deterioration that goes on even in the frozen state seems to be responsible. Spectral reflectance was employed in much of the work and revealed important in situ changes or processes in flesh pigments that would have been impossible to note by other means.

SSR-Fish. No. 250 - Catch Rate, Size, Sex, and Food of Tunas and other Pelagic Fishes Taken by Trolling off Oahu, Hawaii, 1951-55, by Albert L. Tester and Eugene L. Nakamura, 25 pp., illus., December 1957. Presents the catch rate, lure preference, size, weight-length relation, sex and maturity, and food data for four marine species--skipjack tuna, little tuna, yellowfin tuna, and dolphin. Where possible, similar data on frigate mackerel, wahoo, and jack mackerel have been reported.

FL-445 - Operation of North Atlantic Type Otter Trawl Gear, by Boris O. Knake, 19 pp., illus., May 1958. Describes and illustrates in detail the method of side-trawl fishing. The basic principles of operation apply to any size net or vessel since the weight of the otter doors has no effect on the basic procedure. Each step is given in the procedure of setting the net, "shooting" the trawl, hauling the net, and landing the catch. Also contains a list of available publications on fishing gear.

Sep. No. 514 - Freezing and Storing Deep-Sea Lobsters--Some Tests on Cooked Whole Lobsters.

Sep. No. 515 - Nutritional Value of Fish in Reference to Atherosclerosis and Current Dietary Research.

Sep. No. 516 - Research in Service Laboratories (July 1958): "Technical Note No. 45 - Preparation of Dried Fish Solubles from Concentrated Press Liquors on a Laboratory Scale."

Fresh or Frozen Yellowfin, Skipjack, and Bigeye Tuna (Report of the Secretary of the Interior to the President and the Congress), 83 pp., illus., processed, May 1958. This report is concerned only with the factors affecting the condition of the domestic yellowfin, skipjack, and bigeye tuna fisheries. The report, including several pages of tables and charts, covers such items as the world tuna fisheries, United States tuna fisheries, the Eastern Pacific fishery for yellowfin and skipjack, trends in vessel operations, trends in employment in the tuna fisheries, price trends, effect of imports on domestic prices and operating costs, Japanese production, and the import situation. The tuna industry, the report points out, is composed of many segments--large canners, small canners, importers, fishermen, and operators of such large vessels as bait boats and purse seiners and of such smaller craft as albacore trollers. Each group is confronted with different problems, mainly associated with the species involved or the stage at which it handles the tuna. According to the report, such adverse trends as declining landings and lower prices for domestic tuna have been intensified by the general upturn in costs, which has increased the cost of operations for the United States tuna producers. The American fishery must compete with foreign fisheries having lower vessel construction costs, long-term loans at low interest rates, and government subsidies which have facilitated the construction, rebuilding, and insuring of vessels.

THE FOLLOWING SERVICE PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED:

California Fisheries Trends and Review for 1957, by V. J. Samson, 43 pp., processed. (Available free from the Market News Service, Post Office Bldg., San Pedro, Calif.) This is a review of the 1957 trends and conditions in the California fisheries, including a resume of American Tuna Boat Association tuna auction sales. Among the subjects discussed are the tuna fishery (cannery receipts; total pack for 1946-57; imports of frozen tuna and canned tuna in brine; ex-vessel prices; domestic albacore fishery and prices; canned tuna market conditions, prices, and standards; changes in the tuna fleets; and tuna catch and weighted average prices per ton, 1948-57); California sardine (pilchard) fishery (landings, ex-vessel prices, canned pack, and canned sardine prices); mackerel fishery (cannery receipts, ex-vessel prices, and canned mackerel markets and price quotations); anchovy fishery; canned pet-food production; and changes in fishery regulations. Included in the statistical tables are data on tuna and tunalike fish (canners' receipts by species and by months; domestic landings; cannery receipts of frozen imported tuna; and canned pack by style of pack and by months); sardines (landings, canned pack, and meal and oil produced); mackerel and jack mackerel (canners' receipts, and canned pack); canners' receipts and production of miscellaneous fishery products (receipts and canned pack of anchovies, herring, and squid; pet food pack; meal and oil production); California canned tuna price ranges, 1956/57; freezings of fish and shellfish by months; cold-storage holdings of fish and shellfish by months; landings of market fish and shellfish at Eureka, San Pedro-Santa Monica, and San Diego by species and by months; and imports of fresh, frozen, canned, dried, salted, smoked, and miscellaneous fishery products into Arizona and California by commodity and country of origin.

California Fishery Products Monthly Summary, April 1958, 11 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of raw tuna and tunalike fish, herring, mackerel, anchovies, and squid; pack of canned tuna, herring,

mackerel, anchovies, and squid; market fish receipts at San Pedro, Santa Monica, San Diego, and Eureka areas; California imports; canned fish and frozen shrimp prices; American Tuna Boat Association auction sales; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, May 1958, 12 pp. (Market News Service, U. S. Fish and Wildlife Service, 656 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces; fresh-water fish, shrimp, and frozen fillet wholesale prices; for the month indicated.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, May 1958, 5 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; and wholesale prices of fish and shellfish on the New Orleans French Market; for the month indicated.

Monthly Summary of Fishery Products in Selected Areas of Virginia, North Carolina, and Maryland, May 1958, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Ocean City, and Cambridge; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

New England Fisheries--Monthly Summary, May 1958, 21 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the principal New England fishery ports, presenting food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

(Seattle) Monthly Summary - Fishery Products, April 1958, 6 pp.; May 1958, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, Pier 42, South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Oregon) wholesale dealers; also Northwest Pacific halibut landings; for the months indicated.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Description and Distribution of Larvae of Four Species of Tuna in Central Pacific Waters, by Walter M. Matsumoto, Fishery Bulletin 128 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 58), 44 pp., illus., printed, 30 cents, 1958.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ALMANAC:

The American Nautical Almanac for the Year 1959, 276 pp., illus., printed, $2. Nautical Almanac Office, U. S. Naval Observatory, Washington, D. C., 1958. (For sale by Superintendent of Documents, Government Printing Office, Washington 25, D. C.) The object of this volume is to provide, in a convenient form, the data required for the practice of astronomical navigation at sea.

BELGIUM:

Belgium: An Act Empowering the Crown to Prescribe Measures to Protect Sea Reserves of Fish, Crustaceans, and Molluscs, Food and Agriculture Legislation, vol. 6, no. 3, XVI.5/57.2, 2 pp., printed. Food and Agriculture Organization of the United Nations, Rome, Italy. (For sale by the Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.)

CANADA:

The Canadian Fish Culturist, Issue 22, May 1958, 26 pp., printed. Information and Educational Service, Department of Fisheries, Ottawa, Canada. Contains the following papers which were presented at a meeting of the Committee on Biological Investigations of the Fisheries Research Board of Canada held at Ottawa in January 1957: "Some Principles Involved in Regulation of Fisheries by Quota," by W. E. Ricker; "Regulation of the Atlantic Salmon Fisheries," by C. J. Kerswill; "Regulation of the Lobster Fishery," by D. G. Wilder; "Some Sociological Effects of Quota Control of Fisheries," by J. L. Hart; and "Some Economic Aspects of Control by Quota," by W. C. MacKenzie.

"A Century of B. C. Fishing," by L. G. Swann, article, Trade News, vol. 10, no. 10, April 1958, pp. 3-8, illus., printed. Department of Fisheries, Ottawa, Canada. A brief account of British Columbia's fishing industry, describing the early fishing and processing methods and the many changes that have occurred in this industry during the last century. Expansion of the various fisheries is discussed, as well as the early supervision and present regulation of the fisheries in British Columbia.

Journal of the Fisheries Research Board of Canada, vol. 15, no. 3, May 1958, 218 pp. text, 6 photographic plates, illus., printed. Fisheries Research Board of Canada, Ottawa, Canada. Contains, among others, the following articles: "The Fecundity of Pacific Herring (Clupea pallasi) in British Columbia Coastal Waters," by

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Fezuko Nagasaki; "A Comparison of Sockeye Salmon Catches at Rivers Inlet and Skeena River, British Columbia, with Particular Reference to Age at Maturity," by Harold Godfrey; and "The Evolution of Migratory Behavior Among Juvenile Salmon of the Genus Oncorhynchus," by William S. Hoar.

COD:
Factors Influencing the Size of the Year Classes in the Arcto-Norwegian Tribe of Cod, by Kristian Fredrik Wiborg, Fiskeridirectoratets Skrifter, Report on Norwegian Fishery and Marine Investigations, vol. XI, no. 4, 24 pp., illus., printed. A. S. John Griegs Boktrykkeri, Bergen, Norway, 1957.

COLUMBIA RIVER BASIN:
Columbia River Basin Fishery Program, Part I--Comprehensive Research Program for Development of the Fishery Resources, 55 pp., processed; and Part II--Inventory of Streams and Proposed Improvements for Development of the Fishery Resources, 100 pp., illus., processed. Fishery Steering Committee, Columbia Basin Interagency Committee, 206 Custom House, Portland 9, Ore., January 1957.

DELAWARE:
Annual Report of the Delaware Commission of Shell Fisheries of the State of Delaware for the Fiscal Year July 1, 1956 to June 30, 1957, 7 pp., processed. The Delaware Commission of Shell Fisheries, State House Annex, Dover, Del., 1957. An annual report of the Delaware Commission of Shell Fisheries describing its activities in Delaware Bay, Indian Bay, and Rehoboth Bay. Also includes a report of the Commission's appropriations and disbursements during the fiscal year beginning July 1, 1956, and ending June 30, 1957.

EXPORTS:
Schedule B--Statistical Classification of Domestic and Foreign Commodities Exported from the United States, January 1, 1958, Edition, 1180 pp., printed, $6.00 domestic and $7.50 foreign. Foreign Trade Division, Bureau of the Census, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.) Schedule B is the statistical classification of commodities exported from the United States used in compiling the official United States export statistics. It shows for each commodity description (including fishery products and related commodities) the commodity code numbers to be shown on the required Shipper's Export Declaration. Also includes classification of country designations used in compiling United States foreign trade statistics (Schedule C); code classification of customs districts and ports (Schedule D); units of quantity and conversion factors; code classification of economic classes; and export commodity group and subgroup classifications. The price of the Schedule, includes supplemental bulletins and pages which will be issued irregularly to keep the Schedule which is in loose-leaf form, up to date for an indefinite period.

FISH HANDLING:
Handling Fish in Trawlers at Sea to Produce a Quality Product, 22 pp. photographs, processed. Inspection and Consumer Service, Department of Fisheries, Ottawa, Ontario, Canada, 1958. Presents 11 examples of the right and wrong way to handle fish in trawlers at sea. Brief explanatory captions are included with each illustration.

Handling Fish in Inshore Boats to Produce a Quality Product, 16 pp. photographs, processed. Inspection and Consumer Service, Department of Fisheries, Ottawa, Ontario, Canada, 1958. Presents 8 examples of the right and wrong way to handle fish to ensure a first-quality product for consumption. Brief explanatory captions are included with each illustration.

FOOD AND AGRICULTURE ORGANIZATION:
Films on Fisheries and Related Subjects, 111 pp., processed. Food and Agriculture Organization of the United Nations, Rome, Italy, 1957. This is a revised list and augmented edition of the first list of films on fisheries and related subjects which was issued by FAO in May 1953. The title, technical data, and content summary of 401 films are given, as well as the addresses of the distributors.

FOREIGN TRADE:
"A Progress Report on the European Common Market and the Proposed Free Trade Area," by Wilfred Lavoie, article, Foreign Trade, vol. 109, no. 13, June 21, 1958, pp. 37-41, printed, single copy 20 Canadian cents. Department of Trade and Commerce, Ottawa, Canada. (For sale by the Queen's Printer, Government Printing Bureau, Ottawa, Canada.) Presents the provisions and outlines the steps being taken for implementation of the Treaty of Rome, instituting the European Economic Community (also known as the Common Market Treaty)--between Belgium, the Netherlands, Luxembourg, France, West Germany, and Italy--which came into force on January 1, 1958. Also reports on the progress made in negotiations for a Free Trade Area.

FRESHNESS TESTS:
"Problems in Determining Fish Freshness," article, Food Technology, vol. 12, no. 5, May 1958, pp. 260-262, printed, single copies of periodical--domestic US$1.50, foreign US$1.75. (Published monthly by the Institute of Food Technologists.) The Garrard Press, 510 North Hickory, Champaign, Ill.

GERMANY:
Seefischerei und Fischversorgung im Jahre 1956 (See Fisheries and Fish Situation in the Year 1956), Statistik der Bundesrepublik Deutschland Bank 178, 71 pp., illus., printed in German. W. Kohlhammer Verlag, Stuttgart, Germany.

HAKE:
"Fresh Fish. 3--Chilled Storage of Hake," by C. E. B. Cooper and C. E. Rosseau, article, Annual Report of the Fishing Industry Research Institute, 1955-56, vol. 9, pp. 8-9, printed. Fishing Industry Research Institute, Cape Town,

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Union of South Africa. Covers a study of possible differences in the storage life of two different sizes of trawl-caught hake. These hake were headed and gutted, packed in crushed ice, delivered to the Institute's laboratory less than 24 hours after removal from the sea, and divided into two weight groups. Group 1 contained hake weighing from $1\frac{1}{2}$ to $2\frac{1}{2}$ pounds, whereas group 2 contained hake weighing from 4 to 6 pounds. Their rates of decomposition during storage in crushed ice were compared on the basis of belly-cavity odor, meat odor when separated from the backbone by a deep internal cut, and odor of the steamed and broiled meat. The external appearance of the skins and cut surfaces and the meat firmness of the two size groups did not differ significantly. Comparisons of hake caught during February and March showed that large hake stayed fresh for 8 days without the development of objectionable odors in raw or cooked samples. On days 9 and 10, however, the larger fish were judged to be off in odor. Small hake remained fresh for an average of 7 days, after which they were judged off in odor. Further comparisons will be made throughout the year, particularly during the winter when the storage life of hake is believed to be rather long. Hake stored at 70° to 75° F. and 95 percent relative humidity were compared for deterioration with hake stored at the same temperature and 30 to 35 percent relative humidity. These hake were suspended in still air in sealed containers. Their condition (deterioration) was evaluated by the degree of off-odor development in the belly-cavity. Comparisons of similar hake showed that hake held under humid conditions developed fishy, sour odors within 20 hours; whereas hake stored under relatively dry conditions were either fresh smelling or possessed only slightly fruity odors after 20 hours of storage. Both groups of hake had developed objectionable odors after 30 hours of storage. Hake stored at the low relative humidity showed surface drying. Earlier studies have shown that the storage life of trawled hake can be extended by dipping the hake before they are iced in a solution that contains a preservative such as sodium benzoate. A further confirmatory test of sodium benzoate dips was carried out aboard the trawler Gilia during May of 1955. In this study, headed and gutted hake weighing 2 to 3 pounds were dipped immediately after they were gutted--in groups of 24--for 30 minutes in 8 gallons of either 1-percent sodium benzoate dissolved in fresh water or 1-percent sodium benzoate dissolved in 10-percent brine. A third group of 24 hake was retained undipped as a control. All 3 groups of hake were then stored separately in crushed ice.

Hake that had been dipped in either of the benzoate solutions remained fresh and without the development of objectional odors in raw or cooked samples for 11 days. These fish, however, were judged off in odor after 13 to 14 days of storage. Undipped control hake remained fresh for 8 days after they were caught. These hake were judged off in odor after 10 to 11 days.

HONDURAS:

Investigacion y Estudio de Puertos Pesqueros de Honduras Costa Norte y Costa Sur (Investigations and Studies of the North and South Coast Fishery Ports of Honduras), by Adolfo Naranjo Betancourt, 137 pp., map folder, processed in Spanish. Banco Nacional de Fomento, Division Tecnica, Tegucigalpa, Honduras, 1957. Reports on the present fishery activities in Honduras and discusses the possibilities of developing the fishery industry to elevate it to a position of major importance in the national economy. Contains a list of the common and scientific names of the most important commercial species of fish, crustaceans, and mollusks; fishery production statistics; statistics on vessels and gear; and comprehensive surveys of the most important fishery ports of Honduras.

IMPORTS:

United States Imports of Merchandise for Consumption (Commodity by Country of Origin), Calendar Year 1957, Report No. FT 110, 197 pp., processed $1. Bureau of the Census, U. S. Department of Commerce, Washington, D. C. June 1958. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) The import statistics include government as well as nongovernment shipments of merchandise (including fish and shellfish and fishery byproducts) from foreign countries to the United States.

INTERNATIONAL COMMISSIONS:

International Fisheries Convention of 1946 (Report by the President on the Sixth Meeting of the Permanent Commission), 34 pp., processed, in English and French. Office of the Permanent Commission, 3 Whitehall Place, London, S. W. 1, England, 1958. A complete report of the Sixth Meeting of the Permanent Commission which was held in London during October 1957. All thirteen member governments were represented by Delegations. Observers were present from the United States and the Union of Soviet Socialist Republics. Observers from the International Council for the Exploration of the Sea, the International Commission for the Northwest Atlantic Fisheries, and the Food and Agriculture Organization of the United Nations also attended.

ISRAEL:

Fishermen's Bulletin, no. 15, March 1958, 40 pp., illus., printed in Hebrew with summaries in English. Ministry of Agriculture, Division of Fisheries, P. O. B. 699, Haifa, Israel. Contains, among others, the following articles: "Around the Fisheries of Israel," by M. Shavit; "The International Council for the Exploration of the Sea Conference in Bergen, 1957," by E. Gottlieb; "Ancient Fishing of the Hebrews from Foreign Literary Sources," by M. Nun; "Know Your Fish," and "A Comparison between the Fish Fauna of the Eastern Mediterranean and the Red Sea," by Dr. A. Ben-Tuvia; "Measurements of Trawl Gear by Means of Underwater Equipment," by M. Ben-Yami; and "On the Performance of the Portuguese Otter Boards."

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ITALY:

Bollettino di Pesca, Piscicoltura e Idrobiologia (Bulletin of Fishery, Fish Culture, and Hydrobiology), vol. 12, no. 1, January-June 1957, 115 pp., 6 pp. photographs, illus., printed in Italian with English summaries. Laboratorio Centrale di Idrobiologia, Piazza Borghese, 91, Rome, Italy. Contains, among others, the following articles: "Prime Osservazioni sulla Biologia della Sardina (Sardina pilchardus Walb.) del Tirreno e Considerazioni Relative alla Pesca" (Preliminary Observations on the Biology of the Sardine (Sardina pilchardus Walb.) in the Tyrrhenian Sea and Factors Related to the Fishery), by Ernesto Sommani; and "Omologazione delle Voci Locali-Dialettali coi Momi Italiani e Scientifici di Pesci, Crostacei, Molluschi, ecc., che si Pescano nello Stretto di Messina e Zone Viciniori, e che Interessano, in Massima Parte l'Alimentazione" (List of the Italian and Scientific Names of the Most Common and Generally Edible Fish, Crustaceans, Mollusks, etc., Found in the Strait of Messina and Vicinity), by Antonino Cavaliere.

Statistica della Pesca e della Caccia, 1957 (Fishing and Hunting Statistics, 1957), 131 pp., illus., printed in Italian. Istituto Centrale di Statistica, Rome, Italy, 1957. Landings of fish in 1956, ex-vessel prices by species, average wholesale prices, number of fishing vessels by type on December 31, 1956.

JAPAN:

Memoirs of the Faculty of Fisheries, Hokkaido University, vol. 5, no. 2, 52 pp., illus., printed. The Faculty of Fisheries, Hokkaido University, Hakodate, Japan, 1957.

REPUBLIC OF KOREA:

A Report on the Development of the Fresh Water Fisheries of South Korea, by Charles L. Fuqua, 23 pp., illus., processed. Office of the Economic Coordinator Korea, Division of Agriculture, Branch of Fisheries, Seoul, South Korea, May 1958. A study and evaluation of the fresh-water fishery resources of South Korea was made to assist the Korean Government in its program to secure greater food production. This study includes information on the species of fresh-water fish; the carp fishery and the possibility of producing about 220 million pounds of carp annually; fish production in water impoundments; the salmon fishery; trout; eels and other species; and tilapia. Fish culture and management, research and education, construction of new hatcheries, and related subjects are also discussed. The report contains definite conclusions and recommendations regarding the future development of the fresh-water fisheries and presents a basis for the development of a fresh-water fisheries program for South Korea.

LOBSTER:

"The Yarmouth Project," by G. J. Gillespie, article, Trade News, vol. 10, no. 10, April 1958, pp. 9-11, illus., printed. Department of Fisheries, Ottawa, Canada. Undersea experiments in Yarmouth, Nova Scotia, waters to study the efficiency of metal traps have been completed. The original project involved the use of steel traps fishing against wooden traps. In the experiment just completed, steel traps and different types of aluminum traps were used. Nylon rope and twine, aluminum floats, aluminum and fiberglass lobster buoys were also tested. The author states that "Assessments of the results of the Yarmouth experiment cannot be made until all findings are correlated and studied by fisheries biologists and engineers. Statistics on comparative catches by wooden and metal traps have been compiled and these figures will be used in the general appraisal of the whole operation. If the efficiency of metal traps can be established, the use of such equipment could have far-reaching effects on the lobster fishery of Canada's Atlantic Provinces."

MULLET:

The Age and Growth of the Red Mullet MULLUS BARBATUS L. in Israel Waters, 1953-1955, by E. Gottlieb, Bulletin No. 12, 20 pp., illus., printed. Sea Fisheries Research Station, Haifa, Israel, June 1956.

NEW GUINEA:

"Freshwater Crayfish in Netherlands New Guinea Mountains," by L. B. Holthuis, article, SPC Quarterly Bulletin, vol. 8, no. 2, April 1958, pp. 36-39, illus., printed, single copy 30 US cents. South Pacific Commission, Noumea; New Caledonia. Reports on the fresh-water crayfish resources of the Wissel Lakes region of Netherlands New Guinea. The article is especially timely since the South Pacific Commission has begun to explore the possibilities of introducing new species of edible pond fish to this area.

NORWAY:

Norges Fiskeries, 1956 (Fishery Statistics of Norway), Norges Offisielle Statistikk XI, no. 293, 99 pp., illus., printed in Norwegian with foreword, table of contents, and summary in English. Fiskeridirektoren, Bergen, Norway, 1958. A detailed statistical report on the fisheries of Norway with discussions of the number of fishermen, craft, processing plants, and gear; quantity and value of total landings; herring, sprat, cod, mackerel, tuna, dogfish, and capelin fisheries; fisheries in distant waters; and catch of small whales, and sealing. Statistics are given on quantity, value, and average prices of all species of fish caught commercially. Also contains a list of scientific and common names, in four different languages, of fish, crustaceans, mollusks, and other aquatic organisms in Norwegian waters; drawings of the principal species of fish, mollusks, and crustaceans; and drawings of the different types of fishing gear.

OYSTERS:

"Chlortetracycline for Preserving Gulf Oysters," by A. F. Novak, E. A. Fieger, and M. E. Bailey, article, Food Technology, vol. 12, no. 5, May 1958, pp. 237-239, printed, single copies of periodical--domestic US$1.50, foreign US$1.75. (Published monthly by the Institute of Food Technologists.) The Garrard Press, 510 North Hickory, Champaign, Ill.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

El Ostion Cubano (The Cuban Oyster), by Dr. Mario Sanchez Roig and Federico Gomez de la Maza, Folleto de Divulgacion No. 1, 52 pp., illus., printed in Spanish. Ministerio de Agricultura, Asesoria Tecnica de Pesca, Havana, Cuba, 1954. Reviews the biology of the Cuban oyster (Crassostrea rhizophorae Guiding), presenting comparative background data on Crassostrea virginica, the most important oyster species of the United States Atlantic coast. Also covers the possibilities of artificial cultivation of oysters in Cuba and governmental regulations for the protection and conservation of Cuba's oyster resources.

PORTUGAL:

Estatistica das Pescas Maritimas no Continente e Ilhas Adjacentes no Ano de 1955 (Marine Fisheries Statistics of the Mainland and Adjacent Islands, 1955), 133 pp., printed in Portuguese. Ministerio da Marinha, Comissao Central de Pescarias, Lisbon, Portugal, 1957. Covers fisheries production by districts, species, and methods of catch; catch of marine mammals; vessels and gear; and number of fishermen.

Gremio dos Armadores da Pesca da Baleia, Relatorio e Contas do Exercicio de 1957 e Orcamento para 1958 (Whaling Vessel Owner's Guild, Report of Operations in 1957 and Budget for 1958), 35 pp., printed in Portuguese. Gremio dos Armadores da Pesca da Baleia, Rua D. Pedro V, 29-1°, Lisbon, Portugal

Resumo Estatistico das Pescas Portuguesas 1938-1956 (Statistical Account of Portuguese Fisheries, 1938-1956), Publicacao No. 34, 52 pp., illus., printed in Portuguese and English, Gabinete de Estudos das Pescas, Avenida da Liberdade, 211, 4°, dt°, Lisbon, Portugal, 1957.

RED SEA:

Contributions to the Knowledge of the Red Sea--1. Sur Quelques Annelides Polychetes du Golfe d'Akaba (On Some Annelid Polychaeta of the Gulf of Aqaba), by Pierre Fauvel and 2. Pycnogonida from the Gulf of Aqaba, by J. H. Stock, Bulletin No. 13, 14 pp., illus., printed, no. 1 in French and no. 2 in English. State of Israel Ministry of Agriculture, Division of Fisheries, Haifa, Israel, July 1957.

SAFETY OF LIFE AT SEA:

Convenio Internacional para la Seguridad de la Vida Humana en el Mar (International Conference on the Safety of Life at Sea)--London, 1948, 208 pp., printed in Spanish. Ministerio de Asuntos Exteriores, Madrid, Spain, 1953.

SALMON:

The Movements of Salmon Tagged in the Sea, Altens, Kincardineshire, 1952, by K. A. Pyefinch and W. M. Shearer, Scottish Home Department Freshwater and Salmon Fisheries Research No. 19, 10 pp., illus., printed, 3s. (42 U. S. cents). Her Majesty's Stationery Office, Edinburgh, Scotland.

Notes on the Relationship between Plankton Sampling and the Food of Pacific Salmon, by George H. Allen, Fishery Report No. 3, 41 pp., illus., processed. Department of Oceanography, University of Washington, Seattle 5, Wash., November 1956.

SARDINES:

"A Consumer Survey Versus Panel Testing for Acceptance Evaluation of Maine Sardines," by Elizabeth F. Murphy, Berton S. Clark, and Ralph M. Berglund, article, Food Technology, vol. 12, no. 5, May 1958, pp. 222-226, printed, single copies of periodical--domestic US$1.50, foreign US$1.75. (Published monthly by the Institute of Food Technologists.) The Garrard Press, 510 North Hickory, Champaign, Ill.

Etude sur les Differentes Methodes de Cuisson de la Sardine (Study of the Different Methods of Cooking Sardines), by R. Meesemaecker and Y. Sohier, French version 34 pp., English version 28 pp., processed, available in either French or English. Federation des Industries de la Conserve au Maroc, 37 Rue Mareuil, Casablanca, Morocco, October 1957. Presents brief reports of the results obtained in cooking sardines by various methods--in water, brine, oil, hot air, and steam--discussing the advantages and disadvantages of each method. Includes statistical tables showing, for each method of cooking, the variations in weight and composition of sardines during cooking as compared with turnips, carrots, and beef cooked in the same manner.

SEA LAMPREY:

"Attack on the Sea Lamprey," by J. W. Moffett, article, Michigan Conservation, vol. XXVII, no. 3, May-June 1958, pp. 21-27, illus., printed. Michigan Department of Conservation, Lansing, Mich. Describes the use and effectiveness of various mechanical and chemical devices to control the sea lamprey in the Great Lakes. Briefly covers the problems of reestablishing the depleted lake trout populations of the upper Great Lakes.

SEAWEED:

"Bright Future for Seaweed," article, Food Manufacture, vol. 33, March 1, 1958, p. 90, printed. Leonard Hill, Ltd., Stratford House, 9 Eden Street, London, NW1, England. Discusses the encouraging prospects of the seaweed industry as a result of the high mineral and vitamin content of seaweed. Reports on a new seaweed meal being produced in Norway which has provided beneficial results in use as an animal food supplement--especially in feeding experiments with dairy cattle and sheep.

SHARK:

Notes on the Greenland Shark, ACANTHORHINUS CARCHARIAS (Gunn), Fiskeridirektoratets Skrifter, Report on Norwegian Fishery and Marine Investigations, vol. XI, no. 10, 12 pp., illus., printed. A. S. John Griegs Boktrykkeri, Bergen, Norway, 1957. Contains two papers: (1) "The Reproduction Problem of the Greenland Shark," by Paul Bjerkan; and (2) "A Uterine Foetus and the Uterus from a Greenland Shark," by Einar Koefoed.

SHRIMP:

Comparative Fishing Trials with Shrimp Nets, 1954-1956, by M. N. Mistakidis, Fishery

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Investigations Series II, vol. XXII, no. 1, printed, 5s. 10d (80 U. S. cents). Her Majesty's Stationery Office, York House, Kingsway, London, W. C. 2, England.

Los Camarones de Mar Cubanos (The Marine Shrimp of Cuba), by Dr. Mario Sanchez Roig and Federico Gomez de la Maza, Folleto de Divulgacion No. 2, 83 pp., illus., printed in Spanish. Ministerio de Agricultura, Asesoria Tecnica de Pesca, Havana, Cuba, 1954. Covers the biology of Cuba's most important commercial species of shrimp--Penaeus setiferus, P. schmitti, P. duorarum, P. aztecus, and P. brasiliensis. Reports on the possibilities of developing Cuba's shrimp fisheries through improved fishery methods and exploratory research. Presents extensive background material on the shrimp fisheries of the United States Gulf Coast.

Prawn and Prawn Fishery of East Pakistan, Nazir Ahmad, 31 pp., 10 plates, illus., printed. Director of Fisheries, Dacca, East Pakistan, 1957.

TROUT:

"Freezing at World's Largest Trout Hatcher," article, Quick Frozen Foods, November 1957, pp. 50-51, 117, illus., printed. Quick Frozen Foods, E. W. Williams Publications, 82 Wall St., New York 5, N. Y. This article describes the process of freezing trout at the world's largest trout hatchery. Trout are caught, dressed, and placed in the freezer within 30 minutes. The trout are seined while still alive and are placed into individual grading boxes. After evisceration and dressing, the fish are placed on trays and then loaded on carts and rolled to the sharp freezer at -50° F. They are glazed with 3 coats of ice, then packaged and carried to the storage room.

The Migrations and Homing Behaviour of Brown Trout, (SALMO TRUTTA L.), by T. A. Stuart, Scottish Home Department Freshwater and Salmon Fisheries Research No. 18, 30 pp., illus., printed, 8s. (US$1.12). Her Majesty's Stationery Office, Edinburgh, Scotland.

VESSELS:

Driving Efficiency with Active Rudder (Advantages of Main and Auxiliary Propellers in Tandem), by F. Busmann, 4 pp., illus., printed. (Reprinted from The Shipping World, December 30, 1953.) The Shipping World, 1 Arundel St., London, W. C. 2, England.

The Pleuger Active Rudder, 4 pp., illus., printed. (Reprinted from Ship and Boat Builder, July 1953.) Ship and Boat Builder, John Trundell Ltd., Temple Chambers, Temple Ave., London, E. C. 4, England.

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NATIONAL FISH AND SEA FOOD PARADE--OCTOBER 6-12, 1958

The United States Department of the Interior Bureau of Commercial Fisheries and the Fishing Industry are working together to encourage the greater use of all fishery products during the "Fish 'n' Sea Food Parade"--October 6-12, 1958. Reports indicate that a great deal of interest has been generated in this fall promotion.

This is the Fishing Industry's all-out promotion channeled over radio, television, newspapers, magazines, and other media. The many advantages of serving fish are being stressed. Many appetizing new fish dishes are being featured. All types of fresh, frozen, canned, smoked, precooked, and cured fishery products and fish dinners will be advertised. Every effort has been

made to get retail stores to display, stock, and promote fishery products during the period assigned to the "Fish 'n' Sea Food Parade" and the months that follow.

Cover page of new fish-cookery recipe leaflet prepared by the Bureau of Commercial Fisheries for use during "Fish 'n' Sea Food Parade."

Typical recipe contained in the recipe leaflet.

NEPTUNE'S NEWBURG

- ¾ pound cooked lobster meat
- ¼ cup butter or margarine
- 2 tablespoons flour
- 1 teaspoon salt
- ¼ teaspoon paprika
- Dash cayenne pepper
- 1 pint coffee cream
- 2 egg yolks, beaten
- 2 tablespoons sherry
- Toast points

Cut lobster meat into ½-inch pieces. Melt butter; blend in flour and seasonings. Add cream gradually and cook until thick and smooth, stirring constantly. Stir a little of the hot sauce into egg yolk; add to remaining sauce, stirring constantly. Add lobster meat; heat. Remove from heat and slowly stir in sherry. Serve immediately on toast points. Serves 6.